Nature, correlates, and consequences of

spousal interrelations in old age

D i s s e r t a t i o n
zur Erlangung des akademischen Grades

Doctor rerum naturalium (Dr. rer. nat.)
im Fach Psychologie

eingereicht an der

Lebenswissenschaftlichen Fakultät
der Humboldt-Universität zu Berlin

von M. Sc. Hannah M. Schade

Präsidentin der Humboldt-Universität zu Berlin
Prof. Dr.-Ing. habil. Dr. Sabine Kunst

Dekan der Lebenswissenschaftlichen Fakultät
Prof. Dr. Bernhard Grimm

Gutachter/Gutachterin: 1. Prof. Dr. Denis Gerstorf

2. Prof. Dr. Ute Kunzmann

3. Prof. Dr. Jenny Wagner

Tag der Verteidigung: 4. September 2019

Table of contents

Acknowledgements

I wish to express my deepest gratitude to my supervisor Denis Gerstorf, who continuously reminded me that the glass was half full, and gently pushed me through the genesis of the present PhD project, which was a rather bumpy ride.

I deeply appreciate how much time Denis devoted to every step of this, the freedom and support he gave me in designing (too) ambitious lab experiments at first, and how much he invested in turning the tide later, providing project ideas, data and co-authors.

That is, I must thank Denis also for bridging to great minds as Christiane Hoppmann, and Nilam Ram, whom I want to show my gratitude for not holding back with sharing their ideas and expertise. This also holds for Jutta Heckhausen and Klaus Rothermund, who provided valuable feedback and help on work that did not make it into this dissertation.

Special thanks go to Frank Infurna and Gizem Hülür, who introduced me to SAS, helped me tame this beast and saved the day countless times. I must thank Gizem Hülür also for her calm and collected way of supervision, which will always stand as example for me.

The most cordial thanks go to my co-author and friend Johanna Drewelies, whose excellent humor made coping with the hassles of the PhD fun, and whom I could always count on.

I cannot thank Jenny Wagner and Ute Kunzmann enough for kindly agreeing to be "Gutachter" – I know this is a lot of work! -, and Manuel Völkle for chairing the committee.

I gratefully acknowledge the friendly support of the Graduiertenkolleg "Self-Regulation Across the Lifespan" for our cortisol analyses. I want to thank Elisabeth Blanke and Annette Brose for their friendly personal and excellent academic support. I am also very grateful for Daniel Leising and Kip Williams for being outstanding academic mentors. A special thanks goes to Malte Friese, who gave me the time to finish this PhD during my new job in his lab.

I thank all of my wonderful colleagues in the Berlin lab, Sabrina Müller, Ina Schöllgen, Simon Krupka, Swantje Müller, Nanna Nothoff, and all student assistants, for the exchange of ideas and fun times together – this also goes for Sandra Gerstorf, who made Kegeln great fun.

I owe a special thanks to our studies' participants, particularly the old couples, to whom I enjoyed closer contact than is usual in science - I wish our analyses could do justice to the richness of wisdom you shared with us on "how you do it" after decades spent together.

More than a thank you I owe an apology to Stephan, Elias, Christian, and last but not least Martin, who were all strongly affected by this dissertation. I am sorry.

Last, I want to thank my friends (particularly Kirsten, Tina, Clara, Myrte, Lara and Lasse), and my family, particularly my parents, who set the foundation for this decades ago. Thanks for patiently letting me have my will, be it pursuing a Dr. "rer. nat." or getting a dog.

Abstract

The romantic relationship is a social context that influences individual development and successful aging, e.g. via the affective climate or the resources of the dyad. Greater similarity and interdependence between partners, e.g. in emotional well-being, has often been argued to be beneficial for the faring of individual and relationship; however, recent reviews suggest the need for more diverse designs, analyses and samples, which cover not only earlier but also later points in the lifespan.

The aim of this dissertation is to make a solid contribution to our understanding of well-being similarity and dynamics between romantic partners across the lifespan and in old age. To do so, it draws on notions of socio-contextual theories of lifespan development and utilizes data from a macrolongitudinal study spanning more than 31 annual waves (SOEP) and an extensive experience sampling study on older couples' everyday life.

Specifically, this dissertation

a) describes the nature and development of well-being similarity over time and its correlates

b) investigates the adaptive potential of well-being similarity for relationship functioning, and

c) explores how the individual's well-being is influenced by the partner's control perceptions.

Multilevel growth models showed that partners did not grow more similar over time in their life satisfaction, and that greater, and increasing, similarity in life satisfaction similarity predicted greater satisfaction with family life. Actor–partner interdependence models revealed that average, and momentary, similarity in negative affect was positively related to everyday perceptions of dyadic mastery, and that the partner's higher momentary control beliefs were associated with lower negative affect in the individual.

The results are discussed in line with the collective model of selective optimization with compensation, further emphasizing the importance of the partner and a sound relationship, as well as dyadic mastery and individual control beliefs, for succesful aging.

Zusammenfassung

Die Paarbeziehung ist ein sozialer Kontext, der individuelle Entwicklung und erfolgreiches Altern beeinflusst, u.a. durch das emotionale Klima in der Beziehung und die Ressourcen des Paares. Größere Ähnlichkeit zwischen Partnern wird häufig als adaptiv für das Wohlbefinden des Individuums und die Qualität der Beziehung angesehen; neuere Übersichtsarbeiten weisen allerdings auf die Notwendigkeit diverserer Forschungsdesigns, Analysen und Stichproben hin, die auch das höhere Lebensalter umfassen.

Das Ziel der vorliegenden Dissertation ist, einen fundierten Beitrag zu unserem Verständnis der Wohlbefindensdynamiken zwischen Lebenspartnern zu leisten. Diese Dissertation baut auf sozio-kontextuellen Theorien der Lebensspannenpsychologie auf, und nutzt Längsschnittdaten des Sozio-Ökonomischen Panels (SOEP) mit bis zu 31 jährlichen Erhebungen, sowie Experience Sampling Daten einer einwöchigen Tagebuchstudie zum Alltag älterer Ehepaare.

Konkret werden a) die Wohlbefindensähnlichkeit zwischen Lebenspartnern über die Lebensspanne, ihre Korrelate und ihre Entwicklung über die Zeit beschrieben,

b) die adaptive Funktionalität größerer Ähnlichkeit im affektiven und evaluativen Wohlbefinden für die Beziehung analysiert sowie

c) die Rolle der Kontrollüberzeugung des Partners für das Wohlbefinden des Individuums untersucht.

Partner wurden sich nicht ähnlicher in ihrer Lebenszufriedenheit über Jahre und Jahrzehnte, wie Mehrebenenwachstumsmodelle zeigten, allerdings war größere, und steigende, Ähnlichkeit prädiktiv für größere Zufriedenheit mit dem Familienleben. Größere durchschnittliche, und Momente von überdurchschnittlicher Ähnlichkeit im negativen Affekt war assoziiert mit dem Gefühl, den Alltag mit dem Partner gemeinsam besser zu meistern. Größere Kontrollüberzeugung als üblich im einen Partner gingen einher mit höherem Wohlbefinden im anderen Partner, wie Actor-Partner-Interdependence-Modelle zeigen konnten. Die Ergebnisse werden im Rahmen des kollektiven Modells selektiver Optimierung mit Kompensation diskutiert und betonen ein weiteres Mal die Wichtigkeit von Partner- und Beziehungsdynamiken sowie individueller und dyadischer Kontrollüberzeugung für Wohlbefinden und erfolgreiches Altern.

List of Papers

This dissertation is based on the following original papers

1. Schade, H. M., Hülür, G., Infurna, F. J., Hoppmann, C. A., & Gerstorf, D. (2016). Partner dissimilarity in life satisfaction: Stability and change, correlates, and outcomes. *Psychology and aging, 31*, 327-339. doi: 10.1037/pag0000096

2. Drewelies, J., Schade, H., Hülür, G., Hoppmann, C. A., Ram, N., & Gerstorf, D. (2018). The More We Are in Control, the Merrier? Partner Perceived Control and Negative Affect in the Daily Lives of Older Couples. *The Journals of Gerontology: Series B.* doi: 10.1093/geronb/gby009

3. Schade, H. M., Drewelies, J., Hülür, G., Hoppmann, C. A., Ram, N. & Gerstorf, D. (under revision). I feel you, we can do this - Similarity in Emotional Experience and Dyadic Mastery. Manuscript submitted at the *Journal of Gerontopsychology and Geriatric Psychology.*

The complete dissertation has the following doi: https://doi.org/10.18452/20555

(Status September, 2019)

Chapter 1: Introduction

Considering context is essential for understanding individual well-being and development (e.g., Baltes, 1987; Bronfenbrenner, 1986; Hoppmann, Gerstorf, & Luszcz, 2011). One powerful context is formed by the people we spend our lives with (e.g., Lang, 2001), shaping cognitions, behavior, and emotional experience (see Butler, 2015). Given this interdependence, it is not surprising that spousal well-being is interrelated (e.g., Bookwala & Schulz, 1996; Hoppmann, Gerstorf, Willis, & Schaie, 2011; Peek, Stimpson, Townsend, & Markrides, 2006; Schimmack & Lucas, 2010; Tambs & Moum, 1992; Windsor, Ryan, & Smith, 2009).

Older spouses may be particularly interdependent in their well-being, as the marital context increasingly becomes more central with advancing age (Lang, 2001) and declining individual resources make aging individuals more susceptible to spousal dynamics and more in need of spousal support (Charles, 2010; Hoppmann & Gerstorf, 2016). Maintenance of well-being and successful aging (Rowe & Kahn, 1998) may thus depend in part on how well older partners manage to master everyday life together (Hoppmann & Gerstorf, 2016). This dyadic mastery of everyday life may be smoother the more similar spouses are in their experience of (emotional) well-being (Anderson, Keltner, & John, 2003). However, conceptual notions and empirical evidence on the benefits of emotional similarity between partners are mixed (see Sels, Ceulemans, & Kuppens, 2018), with some endorsing benefits (Anderson, Keltner, Tiedens, & Leach, 2004) and others risks (e.g., Butler & Randall, 2013).

Thus, this dissertation aims to corroborate and extend our knowledge of spousal interrelations in well-being. The following paragraphs outline theoretical approaches, empirical evidence, and calls for research on spousal interrelations in well-being, the adaptive potential of well-being similarity, and the special case of older spouses.

1.1 Spousal interrelations in well-being

Lifespan researchers have long acknowledged the central role of contextual factors in shaping lifespan developmental trajectories (Baltes, 1987; Bronfenbrenner, 1979). Intimate social relationships such as marriage constitute one particularly important social context (Antonucci, 2001; Baltes & Carstensen, 1999; Berg & Upchurch, 2007; Lang, 2001). Partners often spend much time and longer parts of the lifespan with each other, share the same environments, and have a stake in each other's well-being and successful aging (e.g., Hoppmann, & Gerstorf, 2009, 2016). Thus, it is not surprising that spousal well-being is interrelated (e.g., Bookwala & Schulz, 1996; Hoppmann, Gerstorf, Willis, & Schaie, 2011; Peek, Stimpson, Townsend, & Markrides, 2006; Schimmack & Lucas, 2010; Tambs & Moum, 1992; Windsor, Ryan, & Smith, 2009); and in the long-term, partners shape each other's developmental trajectories in key domains of functioning (e.g., Hoppmann, Gerstorf, & Luszcz, 2011).

One factor that contributes to partners' interrelated developmental trajectories is direct and indirect influences on each other's behavior (Hoppmann, & Gerstorf, 2009). Conceptually, one can expect the spouse to exert influence on the partner's development in a myriad of ways at all stages of the self-regulation process across the lifespan. That is, possible goals, such as establishing a healthy diet, are discussed and evaluated in their value and feasibility on basis of both partner's resources, e.g., control beliefs, and both partner's resources can be employed as means to achieve the selected goal. One theoretical framework that captures this well is the collective model of selective optimization with compensation (Hoppmann & Gerstorf, 2016; cf. Baltes & Baltes, 1990), which depicts how the individual's striving for the highest possible level of functioning is often a very social process, where spouses shape each other's priorities, empower each other to use all individual resources at hand, and compensate for insufficient individual resources or capabilities by giving support where needed.

However, much more research is needed in order to grasp the manifold intricate processes by which partners influence each other. For instance, only recently could be shown how perceptions of control are not only important for health outcomes on an individual level (e.g., Roepke & Grant, 2011), but are also linked to health and health behavior on a dyadic level (Drewelies, Chopik, Hoppmann, Smith, & Gerstorf, 2016). To illustrate, in the couple that wants to establish a healthier diet, the individual with higher perceptions of control might take on a more agentic role, e.g. buying more fruits and vegetables, thereby making it easier, and likelier, for the partner to reach the goal and improve his or her health – which likely results in improved well-being, too. This would be an example of how one partner's control beliefs may affect the other partner's well-being, which will be investigated in the present dissertation: we will investigate dyadic associations of individual well-being and the partner's control beliefs, building on the knowledge that affective well-being and control beliefs are associated on the individual level (e.g., Koffer et al., 2017; Neupert, Almeida, & Charles, 2007; Windsor & Anstey, 2010). Another pathway by which spouses may influence each other's development and well-being is cooperation and collaborative problem solving in everyday life (e.g., Berg, Meegan, & Deviney, 1998; Berg & Upchurch, 2007; Meegan & Berg, 2002), which has been tied to affective covariation between spouses (Berg, Wiebe, & Butner, 2011).

The consequence of everyday partner influences like these, and of long-term interrelated developmental trajectories, may be increasing well-being similarity between partners. Research has indeed shown that interdependent dyads, like young dating partners or recently matched roommates, grow more similar in their emotional well-being over the first year (Anderson et al., 2003; Anderson et al., 2004), which has been termed 'emotional convergence'. However, less is known about longer-term trajectories of well-being similarity between partners. Recent research on a sample with longer-standing couples showed that over the course of almost a decade, they did not grow more similar in mental health (Gerstorf,

Windsor, Hoppmann, & Butterworth, 2013), which can well be counted as well-being indicator. While it is likely that spouses are more similar to each other than to random others on most variables, as could be shown for happiness (Hoppmann et al., 2011), to establish how similar spouses actually are and grow, a within-couple approach is needed (see Gerstorf et al., 2013), which will be employed in the present dissertation.

1.2 The adaptive potential of well-being similarity

Birds of a feather have long been said to be flocking together, suggesting not only prevalence of similar pairings, but also its desirability, e.g. more similar pairings having more fun, smoother interactions, and better relationships. Indeed, research could show that an interaction partner exhibiting similar emotions decreased distress experienced by the individual (Schachter, 1959), and that dyads that are, and grow, more similar in their emotional experience show greater satisfaction with their relationship. Similarity in emotional well-being between partners has even been related to relationship stability (e.g., Anderson et al., 2003; Gerstorf et al., 2013; Guven, Senik, & Stichnoth, 2012).

Also in relationship theorizing, similarity has been proposed to be beneficial to relationship functioning and satisfaction, e.g. in theoretical notions about emotional similarity (Schachter, 1959), emotional convergence (Anderson et al., 2004) and mood matching (Huntsinger et al., 2009; Erber, Wegner, & Therriault, 1996). These theories emphasize that experiencing similar emotional well-being may benefit relationship functioning and satisfaction particularly because interactions might be smoother and everyday problem solving more efficient, e.g. via similarity in problem appraisals (see Berg, Meegan, & Deviney, 1998).

Feeling similarly may indeed allow partners to cooperate better (Anderson et al., 2004), at least, people seem to hold a corresponding lay theory guiding their behavior: when motivated to have a smooth interaction with a novel interaction partner, participants adjusted

their emotions to the anticipated mood of the interaction partner (Huntsinger, Lun, Sinclair, & Clore, 2009; Erber, Wegner, & Therriault, 1996). This was not only the case for positive mood, but also, and particularly strongly, for negative mood of the anticipated interaction partner (Huntsinger et al., 2009). Thus, we assume that similarity in positive affect and particularly negative affect is beneficial for dyadic coping (see Larson & Almeida, 1999; Huntsinger et al., 2009; Berg, Wiebe, & Butner, 2011).

However, other theories emphasize the benefits of rather complementary emotional experiences between partners, through which a downregulation of extreme emotions and, consequently, an adaptive state of relative homeostasis is achieved (see Butler & Randall, 2013; Sels et al., 2018). For example, responding in kind to the partner's negative mood may set off an escalating feedback loop that prolongs the negative experience (see Butler & Randall, 2013). Indeed, greater emotional interrelatedness need not be positive, but sometimes yields negative effects (e.g., Sels, Ceulemans, Bulteel, & Kuppens, 2016; for a discussion, see Sels et al., 2018). Whether greater emotional susceptibility and similarity between partners is for the better or the worse of the individual and the couple heavily depends on the processes that bring it about, and the long-term outcomes that ensue (for a discussion, see Sels et al., 2018). In an extensive review, Sels et al., (2018) point out the necessity of more diverse designs, analyses, and samples in order to make meaningful contributions to the field of emotional similarity research. For instance, interrelations may differ by the age of the sample under consideration, which will be discussed in the next section.

1.3 The case of older spouses

Older, long-standing spouses are a very special unit: they have been shaped by the other and the relationship for long, are experts of each other and the relationship, and may thus even have reached a division of labor in which each spouse specializes in the task that he

or she can do better than the partner, filling in the blanks of each other (Hoppmann & Gerstorf, 2016). Such partners, who typically form one unit that has long tackled life's problems together, likely are particularly interdependent in their well-being and jointly deal with opportunities and challenges (cf. Berg & Upchurch, 2007; Hoppmann & Gerstorf, 2009, 2013, 2016; Sels et al., 2018).

After decades of experience, cooperation with the partner likely becomes more efficient, and at the same time, more important than at younger ages: as couples grow older and retire from work, other social contexts are often decreasing in number, size, and relevance, as older people preferentially spend time with close and closest others (Carstensen, 1992; Lang, 2001; Genadek, Flood, & Moen, 2019). At the same time, resources and abilities decline with advancing age, making compensation through cooperation with a partner particularly valuable and often necessary (Hoppmann & Gerstorf, 2016). Thus, the resources (e.g., coping skills) of one partner can be employed by both partners. Declining resources with advancing age make the affective system increasingly vulnerable (e.g., Charles, 2010), and partner characteristics such as partner perceived control often constitute a resource that both partners can draw from (Drewelies et al., 2016; Windsor & Anstey, 2010).

Maintenance of well-being and successful aging (Rowe & Kahn, 1998) may thus depend in part on how well older partners manage to master everyday life together (Hoppmann & Gerstorf, 2016). Because individual mastery beliefs are often closely tied to affect (e.g., Bye & Pushkar, 2009; Koffer et al., 2017; Neupert, Almeida, & Charles, 2007; Windsor & Anstey, 2010;), we expect dyadic mastery to be associated with affect similarity between partners. Collaborative problem-solving and joint emotion regulation has most often been termed 'collaborative coping' (Berg & Upchurch, 2007; Berg, Wiebe & Butner, 2011) or 'dyadic coping' (e.g., Falconier, Jackson, Hilpert, & Bodenmann, 2015), and has been established as an important factor for individual and relationship outcomes (e.g., Berg & Upchurch, 2007; Berg et al., 2011; Falconier et al., 2015). Little is known though about the

daily-life dynamics of dyadic coping among older adults (for valuable exceptions, see Berg et al., 2011), for which we propose the term 'dyadic mastery'. The present dissertation addresses this gap.

1.4 Calls for research

The goal of this dissertation is to corroborate and extend our understanding of spousal interrelations in well-being across the lifespan and in old age (as discussed above). In doing this, it addresses key questions that have repeatedly been asked in aging and emotion research.

First, there have been calls in both developmental psychology (Baltes & Carstensen, 1999; Hoppmann & Gerstorf, 2016) and emotion research (Fischer & Van Kleef, 2010) to include both partners in our theoretical understanding and empirical investigation of individual development of well-being and psychosocial functioning. This is important because individual development does not occur in isolation but is always embedded into a context (Antonucci, 2001), with a particularly prominent context being the marital relationship. Taking these calls seriously implies not only to ask for individuals to report on their relationship and partner characteristics, but also to assess information of both partners (see Hoppmann & Gerstorf, 2016). The present dissertation complies with these calls by building upon an explicitly social model of development, the *collective* model of selective optimization with compensation, and, most importantly, by using data not only from the individual, but from both partners in all three studies.

Second, longitudinal studies are needed in order to accurately grasp a phenomenon as well-being similarity or emotion dynamics between spouses (see Hoppmann & Gerstorf, 2016; Sels et al., 2018). To illustrate, spouses could be very similar in terms of their well-being at the beginning of their relationship but grow apart over time, or they could differ in their well-being at the beginning but become more alike with time spent together. Given the

complex and highly variable nature of partner interrelations, cross-sectional studies would fall short in its description, but longitudinal and especially momentary ecological assessment studies are needed to understand how spousal dynamics manifest in everyday life and over a longer period of time (see Sels et al., 2018). The present dissertation uses both macro-longitudinal and micro-longitudinal data, making it possible to relate not only levels of but also changes, and fluctuations, in similarity to indicators of relationship functioning. By this, we can show how spousal interrelations in well-being develop over decades and how they unfold in everyday life.

Third, as previous findings paint a mixed picture of the adaptive potential of spousal well-being similarity (cf. Sels et al, 2018), we need diverse samples, designs, analyses, and indicators of functioning in order to make solid contributions to the literature. On the topic of spousal similarity, findings do not form a uniform pattern that would allow generalizations. Instead, similarity and its adaptive potential may differ with different age groups, relationship types, relationship lengths, indicators of functioning, and time scales considered. To illustrate, for working couples who regularly bring home intense stress that is simply spilling over from work and that none of the partners have under control or could solve (Repetti, Wang, & Saxbe, 2009), more complementary emotionality of the partner may be helpful to downregulate distress (cf. Butler & Randall, 2013). In contrast, on older age, when partners are each other's primary contexts (Antonucci, 2001; Lang, 2001) and are very likely to face challenges of every daily life together (Hoppmann & Gerstorf, 2016), similarity in affect might be more adaptive as it may prepare more efficient collaboration (Berg et al., 1998). Similarly, we cannot say whether (daily) dynamics of similarity in heterosexual, monogamous couples can be translated to homosexual or polygamous couples. To illustrate, differences in relationship dynamics and roles attribution might change the importance of similarity if alternative relationship form. Thus, it is necessary to employ a diverse array of specific samples, designs, and indicators of functioning in order to move the field forward.

Last, but not least and related to the previous point, it is necessary not only to consider the convenience sample of young adults, but also the harder-to-get sample of older couples. Particularly for technology-based, work-intense experience sampling studies, older couples may be hard to recruit, however, this is the only way to get ecologically valid information on the everyday life of older adults, their emotional experience and collaboration. This cannot be extrapolated from studies on younger couples, because older couples are known to show different dynamics, e.g. in emotion (e.g., positive sentiment override, Hoppmann & Gerstorf, 2016). The work is worth the extra effort, because older couples are particularly interdependent (e.g., Lang, 2001) and may profit the most from (interventions that enhance) successful collaboration with their partner (cf. Hoppmann & Gerstorf, 2016).

The present dissertation addresses these open questions by using macro- and micro-longitudinal data of both partners of the couple, and focusing on the special sample of older adults in long-term relationships and how they function as a couple in everyday life.

1.5 Theoretical Integration

This dissertation builds upon the *collective* model of selective optimization with compensation (collective SOC; Hoppman & Gerstorf, 2016) as a guiding framework to investigate spousal interrelations in well-being. The collective SOC model is an extension of the prominent selective optimization with compensation model of developmental regulation (Baltes & Baltes, 1990). The original model describes how individuals strive to maintain the highest possible level of functioning, minimize losses and maximize gains, by selecting the right goals and optimizing the necessary means, or compensating for a lack thereof. The collective SOC extends this framework in that it acknowledges that goal selection and striving are often social processes, where priorities are discussed and negotiated between partners, partners support (or hold back) each other in goal striving, and may even chip in with moral or instrumental support to compensate for weaknesses of the individual. Thus, the collective

SOC model takes into account the role close others, particularly spouses, play for successful development. In doing so, it frames the selection of goals and the means to achieve them (optimization with compensation) as an often-social process by which the means of both partners are treated as a common resource that both partners can employ in their goal-striving, potentially compensating for own incapabilities and weaknesses. Thus, the collective SOC model does justice to theoretical notions of lifespan psychology that have long noted that development of the individual does not take place in isolation, but is shaped by the contexts it takes place in (Baltes, 1987; Bronbenbrenner, 1986), particularly the social context (Antonucci, 2001; Hoppmann & Gerstorf, 2016). Figure 1 illustrates the key idea of the collective SOC, namely how spouses' activities, health and well-being are interrelated in general (taken from Hoppmann & Gerstorf, 2009).

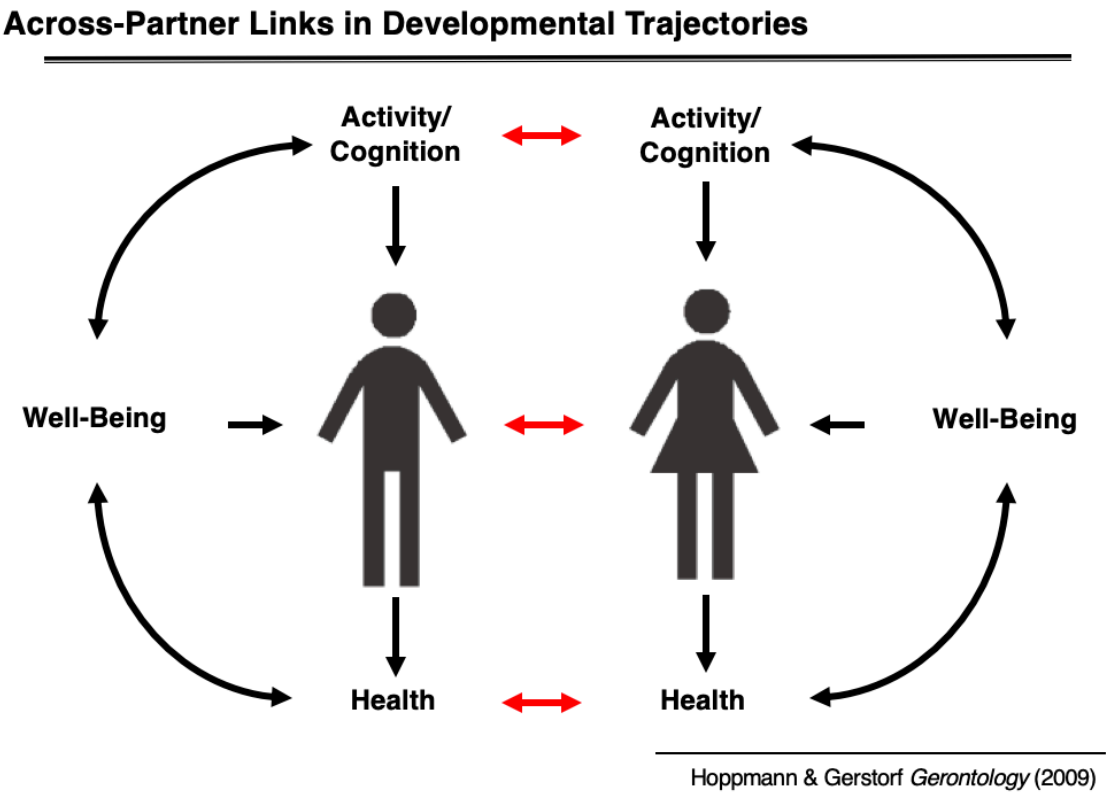


Figure 1. Spousal interrelatedness in well-being, taken from Hoppmann & Gerstorf (2009).

The present dissertation considers individual well-being, satisfaction with family life and feelings of mastery as goals older adults are invested in, and investigates how they may be optimized by means of partner resources as well as (general and momentary) characteristics of the relationship and momentary interactions, namely similarity in well-being. For this matter, the dissertation also incorporates theoretical notions from (dyadic) emotion research that highlight the role of emotional similarity (Schachter, 1959), emotional convergence (Anderson et al., 2004) and mood matching (Huntsinger et al., 2009; Erber, Wegner, & Therriault, 1996). These theories emphasize that experiencing similar emotional well-being may benefit relationship functioning and satisfaction, particularly because interactions might be smoother and everyday problem solving more efficient, e.g. via similarity in problem appraisals (see Berg et al., 1998).

2. Parts of this dissertation and summary of findings

The present dissertation aims to corroborate and extend previous knowledge on spousal interrelations in well-being. Specifically, it investigates partner similarity in life satisfaction across the lifespan (Manuscript 1), partner similarity in affective well-being in everyday life (Manuscript 2), and partners' influence on each other's affective well-being by means of their control beliefs (Manuscript 3). Taken together, the three studies aim to answer the following research questions about spousal interrelations in well-being:

(1) How can we describe partner similarity in well-being?

How similar are romantic partners in their life satisfaction and emotional well-being?

How does partner well-being similarity develop over decades?

How does partner similarity in emotional well-being vary in the everyday life of long-standing, older couples?

(2) Are any of the above associated with indicators of relationship functioning?

Does the development of similarity matter above and beyond initial levels thereof?

Do momentary deviations in well-being similarity matter above and beyond general levels of similarity?

(3) Is the individual's well-being influenced by the partner's control beliefs?

(4) Are any of the above qualified by key individual and relationship characteristics?

To answer these questions, this dissertation makes use of two datasets: a longitudinal (Study 1) and a micro-longitudinal study (Study 2 & 3), with data on both partners' life satisfaction (Study 1), a cognitive-evaluative indicator of subjective well-being (Diener, Inglehart, & Tay, 2012), and on both partner's emotional experience, i.e. affective well-being (Study 2 &3). The first paper investigating partner similarity in life satisfaction over the lifespan uses up to 31 annual assessments of the German Socio-Economic Panel (GSOEP), a representative German panel study running since 1984. The second and third paper use data colleagues and I collected: the Berlin Couple Dynamics Study, an experience sampling study of elder couples

in the Berlin area going about their everyday life over the course of a 'typical' week, reporting their affective well-being and other information, such as their individual control beliefs and dyadic mastery perceptions, several times a day on a tablet. The sample is specific in two ways: First, it consists of retired couples older than 67 years (M_{Age} = 75 years), which have typically shared their life for decades and made it into old age together ($M_{Relationship\ length}$ = 45 years). Second, it assesses affective well-being and perceptions of mastery and control up to five times a day over the course of a week, which allows to examine daily dynamics of well-being and psychosocial functioning.

Table 1. Summary of the dissertation studies' main characteristics

	Main IV	**Main DV**	**Data**
Study 1	**Partner Similarity in Life Satisfaction** (level and slope)	**Satisfaction with Family Life** (subsequent)	**German Socio-Economic Panel** 31 annual waves (1984–2014) N = 13,714 couples, M_{Age} = 43 (17-92)
Study 2	**Partner Similarity in Positive & Negative Affect** (general and acute)	**Dyadic Mastery** (concurrent)	**Berlin Couple Dynamics Study** 7-day experience sampling study
Study 3	**The Partner's Control Beliefs**	**The Individual's Negative Affect** (concurrent)	N = 110 couples, 42 moments M_{Age} = 75 (67-93)

Table 1 summarizes the main characteristics of the three studies. The specific findings of each study are outlined below, the actual papers with a detailed description and discussion of the studies can be found in the appendix. As can be seen, all three studies examine dynamics of well-being in (older) adult couples and move beyond cross-sectional or individual associations of such. Instead, all three studies account for the interdependence between partners, both conceptually and methodologically, and at the same time examine

these links on a macro- and micro longitudinal level. Figure 2 illustrates this in more detail. As can be seen, the dissertation employs assessments spread across the lifespan as well as short-term momentary assessments in old age, a between-couple as well as a within-couple perspective, and a lifespan sample as well as a sample of older couples, which is employed in two studies.

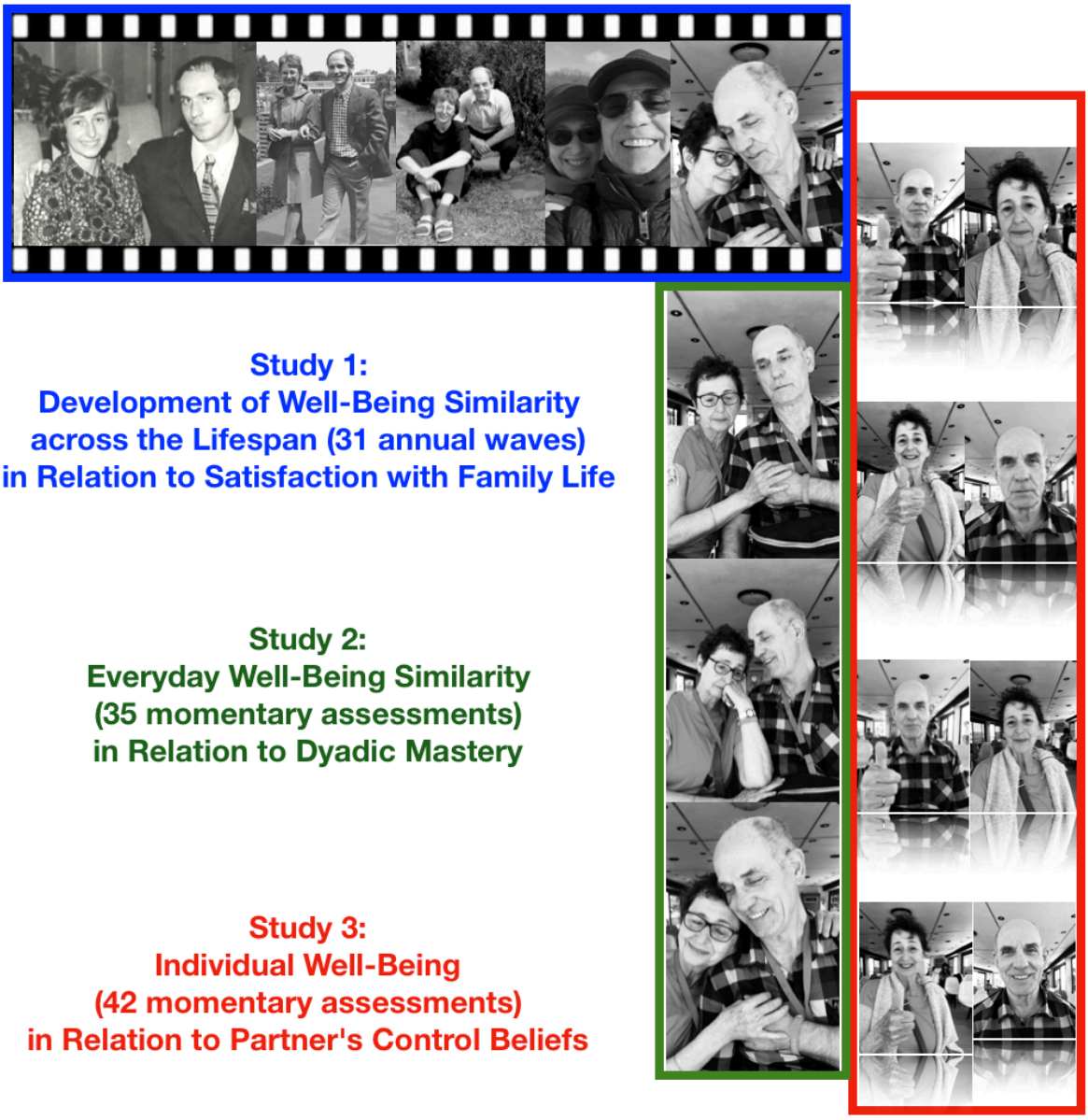


Figure 2. Overview of how the three studies of this dissertation tie into each other, combining different populations (lifespan and old age), perspectives (within-couple and between-couple), and time-scales (annual and momentary measurements).

2.1 Spousal similarity in life satisfaction across the lifespan

The first paper of this dissertation sets out to describe the nature, development, and correlates of partner similarity in life satisfaction across the lifespan. Specifically, it aims to (a) define the level of similarity in life satisfaction between romantic partners, (b) describe their trajectory of similarity in life satisfaction over decades, (c) relate level and trajectory in life satisfaction similarity to later satisfaction with family life, and (d) explore how key individual and relationship characteristics may influence all of the above.

To do so, the first paper relies on data of the representative German Socio-Economic Panel study and makes use of up to 31 annual assessments from 1984 to 2014, with 13,714 couples contributing to some or all of these waves. The sample covers almost the full adult life span, with an age range from 17 to 92 years (M_{Age} = 43 years). Similarity was computed by means of the absolute difference between partner's individual life satisfaction scores.

The findings reveal that spouses' life satisfaction scores differ by about two thirds of a standard deviation and that similarity *de*creases slightly over time. While older age correlated with lower levels of similarity, a longer relationship duration was associated with greater similarity in life satisfaction, indicating contrasting dynamics and underlining the importance of considering different time scales on which to map developmental dynamics (see, e.g., Gerstorf, Hoppmann, & Ram, 2014).

As for associations of well-being similarity with indicators of relationship functioning, both lower levels and steeper decreases in life satisfaction similarity were associated with lower satisfaction with family life at the end of the study. This held even when controlling for earlier levels of satisfaction with family life and each partner's level of life satisfaction. That is, while the emotional convergence hypothesis (Anderson et al., 2004) stating that dyads grow more similar in well-being over time could not be corroborated for life satisfaction in the present lifespan sample, the findings do lend support to the idea of similarity benefiting

the dyad (e.g., Schachter, 1959; Anderson et al., 2003; Anderson et al., 2004; Huntsinger et al., 2009).

2.2 Partner similarity in affective well-being in older couple's everyday life

The second paper investigates partner similarity in affective well-being in a one-week experience sampling study of elder German couples in the Berlin area, and relates this to everyday perceptions of dyadic mastery, i.e. the perception to master everyday life well together with the partner. Participants indicated up to six times a day how they felt on an iPad, indicating how strongly they felt each of 15 emotions on a slider scale from 0 to 100. Similarity was computed for positive (PA) and negative affect (NA) separately by taking the absolute difference score between partners. On average, spouses differed in their affective experience by about 15%. For analyzing the effects of general vs. acute similarity separately, similarity levels were split into a couple-specific general level of similarity in positive or negative affect and momentary deviations from their couple-specific mean, i.e. momentarily higher, or lower, similarity in PA or NA than usual.

Analyses of actor-partner interdependence models revealed that higher (average and momentary) similarity in negative, but not positive, affect between partners indeed predicted higher levels of dyadic mastery among both men and women. The results point to the significance of emotional synchrony in negative emotions between partners for smooth relationship functioning, which is in line with research showing that individuals motivated to have a smooth interaction try to match their mood with their interaction partner (Huntsinger et al., 2009; Erber, Wegner, & Therriault, 1996), and that similar problem appraisals may facilitate collaboration (Berg, Meegan & Deviney, 1998).

2.3 Partners' affect as a function of each other's control beliefs

The third paper investigates how partners' well-being in everyday life may be interrelated by means of their individual resources, specifically, how individual's control beliefs may be associated with negative affect of the partner, using up to 42 momentary assessments of the same one-week experience sampling study of elder German couples reported above. To separate general and momentary levels of control beliefs, variance therein was split into an individual-specific average level of control beliefs, and momentary deviations thereof.

Using actor-partner interdependence models the findings suggest that indeed, individual well-being was associated with the partner's control beliefs, above and beyond individual control beliefs. Interestingly, only the partner's momentary deviations from his or her average control beliefs, but not his or her general levels of control beliefs, were associated with the individual's well-being, such that the individual's negative affect was lower in moments when his or her partner experienced greater-than-usual control beliefs. This is neatly in line with the theoretical notion put forward by the collective SOC model of spouses drawing on the partner's resources when optimizing and compensating goal strivings such as the maintenance of well-being in older age (see Hoppmann & Gerstorf, 2016). To illustrate, older partners seem to be very attentive to fluctuations in their partner's outlook on life, picking up on subtle changes in perceived control. Noticing that the partner is more than usually convinced that he or she can influence what is happening in his or her life may benefit the individual's well-being in many ways, e.g. he or she may relax knowing that the partner needs less support than usual, or he or she may even take advantage of the situation and discuss and solve a problem that had long been avoided together with the partner.

3. General Discussion

Building upon the overarching framework of the collective SOC model (Hoppmann & Gerstorf, 2016) and borrowing from theoretical notions of life span theory (Baltes & Carstensen, 1999; Antonucci, 2001), this dissertation set out to corroborate and advance our knowledge on spousal interrelations in well-being. Specifically, it showed that spouses' well-being is associated with their partner's control beliefs, and that well-being similarity between spouses, its development across decades of the lifespan and its fluctuations in the everyday life of long-standing, old couples, is associated with indicators of smooth relationship functioning. The results corroborate previous research and theory emphasizing that spouses matter for each other's well-being (Antonucci, 2001; Hoppmann & Gerstorf, 2016), and extend our knowledge about size, development and associations of well-being similarity between spouses. The findings of this dissertation contribute to our understanding of spousal well-being dynamics in several ways, and have conceptual, methodological and practical implications, which are outlined below.

3. 1 Conceptual Insights and Implications

To begin with, our findings suggest that spouses do not necessarily grow continuously more similar in well-being over time, but may instead even drift slightly apart over years and decades, and still vary in their similarity after decades spent together. This finding is in line with previous research showing rather stable levels of partner similarity in another indicator of well-being, mental health (Gerstorf et al., 2013), but is in contrast with the emotional convergence hypothesis (Anderson et al., 2004), which was postulated based on data of young, recently-matched dyads, who indeed grew more similar over the first months of their acquaintance. This discrepancy may thus may speak to differential dynamics based on relationship length, with couples first drawing closer and then drifting apart again. Along the same vein, it is interesting to note that while time decreased similarity and, similarly, older

couples were less similar in life satisfaction than younger couples, at the same time, partners in longer relationships were more similar in their life satisfaction.

Turning to our understanding of the adaptivity of similarity between partners, which is unresolved in the literature (cf. Sels et al., 2018; Hoppmann & Gerstorf, 2016), in our studies it was clearly positively associated with variables that flag relationship functioning, even above and beyond self-reported relationship quality and other key relationship characteristics. There seems to be a clear supremacy of the adaptivity of similarity over possible benefits of complementarity, at least when it comes to the variables under investigation here, i.e., satisfaction with family life in relation to (developments in) similarity of life satisfaction over year, similarity in negative affect (average and momentary) and everyday life perceptions of dyadic mastery. However, as the mixed findings in previous research suggest, there may very well be samples, situations, types of similarity and outcomes for which dynamics may be different (see Butler & Randall, 2013; Sels et al., 2018). A factor qualifying adaptivity may also be *how* this similarity may come about, i.e., there may be benefits only in some cases of similarity, depending on its genesis, e.g. similarity based on similar appraisals of a situation may be adaptive, while similarity based on stress contagion may be maladaptive (see Sels et al., 2018). Future research should try to approach this; in the present sample, it is impossible to determine how similarity came about, given the association with dyadic mastery, one factor can be speculated to be joint problem appraisals as put forward by Berg et al. (1998).

Of conceptual, methodological, and practical relevance, it is noteworthy that above and beyond initial levels of life satisfaction similarity, also the steepness with which partners fell apart in their life satisfaction predicted subsequent satisfaction with family life. Similarly, dyadic mastery was predicted by momentary fluctuations in negative affect above and beyond general levels thereof, and for individual well-being, it was not general, but only momentary fluctuations in the partner's control beliefs that were associated with individual well-being. That is, even in these life-long relationships, spouses seem to be very alert to any changes in

their partner's control beliefs, reacting with changes in their own negative affect, or updating their state belief that they and their partner manage everyday life well dynamically in accordance with how similar their partner's affect is to theirs. This is important, because it highlights the relevance of daily life for adult development and aging.

3.2 Methodological insights and practical implications

The findings highlight once more the importance of investigating development and fluctuations of individual and relationship characteristics over time, and including this information in our models alongside their general or starting level. In the present studies, the steepness of the dissimilarity development was predictive of later satisfaction with family life, above and beyond starting levels of dissimilarity; and it was not general levels of the partner's control beliefs that were associated with individual well-being, but only his or her momentary deviations from that average mattered.

As mentioned before, while time decreased similarity and, similarly, older couples were less similar in life satisfaction than younger couples, at the same time, partners in longer relationships were more similar in their life satisfaction. These discrepancies highlight how important it is to consider different time scales, as they may reveal different dynamics (see Gerstorf, Hoppmann, & Ram, 2014).

Interestingly, while one could assume that the more adaptive 'type' of similarity is that in positive affect, only negative affect similarity was related to everyday dyadic mastery, positive affect similarity showed no associations with dyadic mastery. This may be in line with general notions of bad being stronger than good (Baumeister, Bratslavsky, Finkenauer, Vohs, 2001), i.e., that negative events and emotions being more attended to as they have a greater relevance for our survival and well-being than positive aspects of our environment. If this was the case, the pattern of negative affect similarity being more relevant for dyadic mastery than positive affect similarity should generalize to other indicators of functioning. On

the other hand, this difference between positive / negative affect similarity may be specific to the variable it is associated with here: an evaluation of dyadic mastery. As previous research has found negative affect to be more strongly tied to evaluations in older adults (Kunzmann, 2008), this could likely be the reason for this association. Future research on the adaptive potential of emotional similarity between spouses should take this into account, and also would ideally investigate both similarity in positive and negative affect separately.

As for practical insights, findings highlight the importance of the partner for individual well-being, and of partner's similarity in well-being for smooth interactions in everyday life and long-term satisfaction with family life. These findings suggest that the partner, and his/her control beliefs, may be a resource to draw from in order to maintain well-being in old age. Also, well-being similarity, particularly in negative affect, may produce – or be the product of – smooth interactions (cf. Anderson et al., 2004), less conflict-prone and more efficient problem solving (cf. Berg et al, 1998). As a consequence, interventions for older adults should not only target the individual but also be expanded to the dyadic level helping older couples to manage everyday life better. This could not only be of relevance in everyday life but especially in situations in which older couples are confronted with more severe problems (e.g., a health event). It needs to mentioned that as helpful as the spouse can be for development and managing everyday life, dynamics always go both ways, in the sense that being interrelated with a spouse does not only hold gains but also losses (cf. Hoppmann & Gerstorf, 2009).

Most importantly, the findings highlight the importance of micro-dynamics and deviations from average levels of similarity or control beliefs for partner thriving, even in long-standing couples, which may be surprising to many. It highlights the variability, and thus, possibly, the malleability of spousal dynamics even in old age, which is the basis for any potential of intervening. However, before any of these ideas could possibly be used to help

older couples or inform interventions, several limitations should be addressed, which are discussed below.

3.3 Limitations and Outlook

In order to permit a meaningful interpretation of the present findings, several limitations should be considered, which are outlined below.

To begin with, the non-experimental design of the present studies only allows for inferences about associations of the model's variables, not about their directionality. This is particularly true for the studies on older couples' everyday dynamics, in which only concurrent associations of affect (similarity) and dyadic mastery / control beliefs were investigated. While the choice for which concept to treat as dependent variable in the model was based on theoretical notions, yet, any causal effects could go both ways. In the first study using longitudinal data, there is at least timely precedence of the presupposed independent to the declared dependent variable, in that greater well-being similarity at one time (2006) predicted later satisfaction with family life (2012), even when controlling for baseline levels of satisfaction with family life in 2006. While this seems suggestive of similarity actually being conducive satisfaction with family life, there may be much more complex processes unfolding that produce this pattern. To illustrate, one could assume that affective well-being affects dyadic mastery / control beliefs but that, at the same time, dyadic mastery / control beliefs affects affective well-being. Future research should therefore target potential mechanisms linking the variables, e.g. empathic accuracy (Hülür et al., 2016) or similar problem appraisal (see Berg, Meegan, & Deviney, 1998). To illustrate, couples with higher empathic accuracy might show stronger associations between similarity and affective well-being, because they might be better able to pick up one's partners emotional state. Similarly, problem appraisal might play a role in moderating associations between well-being similarity and dyadic mastery / perceived control. Couples who perceive to be more in control or better

able to manage everyday life might be better able to apply problem solving strategies to everyday problems which might in the long run, allow them to maintain or regain higher levels of affective well-being.

For this specific case, qualitative research may additionally help to substantiate findings on well-being dynamics between partners. For example, in-depth interviews about the perceptions of similarity in well-being and perceived regulatory mechanisms might provide further detail about the nature of spousal interrelations that have not been covered in the current dissertation.

While it needs to be highlighted that the present dissertation used both longitudinal and micro-longitudinal data, ideally, these different time scales would be using the same sample, in order to relate daily dynamics to long-term precursors, and outcomes (see Gerstorf, Hoppmann, & Ram, 2014), which is an ambitious but highly promising ideal that future research should aim for whenever possible. For instance, by combining the study of intraindividual change across longer time periods with the study of intraindividual variability of similarity (Nesselroade, 1991), one could investigate whether low responsiveness in well-being to the partner's fluctuations in control perceptions in everday life may indicate overall low flexibility to adapt to changing opportunities and circumstances, which might undermine relationship satisfaction in the long run.

As for limitations of the measures, all main variables of interest in this dissertation were (based on) self-reports, which comes with an array of problems. As inevitable as self-report may be for assessing constructs accessible only by the subject such as subjective well-being or (dyadic) control perceptions, broader response tendencies may impact all variables in a similar way. Thus, the associations of self-reported well-being and self-reported dyadic mastery may be the product of a response tendency influenced by general mood or by anchors and primes in the environment or set by the partner. These influences on response tendencies may be particularly impactful in the present study, as reports were assessed using a slider

scale, which may exacerbate effects of, e.g., pro-active tendencies. Additionally, all primary variables other than the affect composites are single items (e.g., life satisfaction, dyadic mastery, individual control beliefs). As repeated assessment in time-sampling studies seldomly allows for multi-item assessments of a construct, more subtle dynamics may be picked up by such an assessment.

While the lifespan SOEP-sample indeed is representative to the German population, the Berlin Couple Dynamics Study is a very positively select sample of particularly high-functioning individuals in extraordinarily long-standing and satisfied relationships. Its homogeneity in age, education, health, relationship length and relationship satisfaction may have hindered to pick up on associations with different levels on these variables. Similarly, one can only speculate whether the found associations would be qualified by these individual and relationship characteristics if there was more heterogeneity in the sample. As hard as it may be to find participants that are not only partnered and retired but also diverse in key individual and relationship characteristics, this may be an effort worthwhile in future research as it may allow to identify subgroups that may profit the most or least from the partner's control beliefs and well-being similarity.

3.4 Conclusion

The present dissertation corroborates and extends previous knowledge on spousal interrelations in well-being. Combining evidence from macro-longitudinal and micro-longitudinal data, information from both partners, samples of the lifespan and particularly old age, between- and within-couple perspectives, the studies provide a sound picture of well-being similarity and dynamics between partners, particularly in old age.

Findings underline once more that spouses' well-being is interrelated, as socio-contextual models of lifespan development have long emphasized (cf. Hoppmann & Gerstorf, 2016). Interestingly, well-being similarity did not grow over decades, and even after decades

spent as a couple, its fluctuations in everyday life were associated with ups and downs in dyadic mastery, i.e. the perception that one manages everyday life well with the partner. In line with this reasoning, results indicated that more similar partners were more satisfied with their family life.

These findings add to our generally inconclusive understanding of the adaptive potential of spousal similarity (cf. Sels et al., 2018), suggesting that at least in older adults, emotional similarity may facilitate smooth interaction and cooperation. Pathways could include similar problem appraisals (cf. Berg et al., 1998) as well as feeling validated and understood (cf. Anderson et al., 2004), and should be addressed in future research.

Similarity may matter most in old age, where the individual is particularly interdependent with the spouse and may be in increasing need to employ external resources to maintain functioning (cf. Hoppmann & Gerstorf, 2016). In line with the collective SOC model, older individuals' well-being was related to their partner's control beliefs, suggesting that indeed both partners' resources may be employed in optimizing, or compensating, the means for well-being maintenance.

Together, the three studies of this dissertation make up a sound contribution to our understanding of spousal interrelations in well-being, and pave the way for fruitful avenues of future research.

References

Amato, P. R., & Hohmann-Marriott, B. (2007). A comparison of high- and low-distress marriages that end in divorce. *Journal of Marriage and Family, 69,* 621–638. doi: 10.1111/j.1741-3737.2007.00396.x

Amato, P. R., & Previti, D. (2003). People's reasons for divorcing gender, social class, the life course, and adjustment. *Journal of Family Issues, 24,* 602–626. doi: 10.1177/0192513X03024005002

Anderson, C., Keltner, D., & John, O. P. (2003). Emotional convergence between people over time. *Journal of Personality and Social Psychology, 84,* 1054–1068. doi: 10.1037/0022-3514.84.5.1054

Anderson, C., Keltner, D., Tiedens, L. Z., & Leach, C. W. (2004). The emotional convergence hypothesis. In L. Z. Tiedens (Ed.), *The social life of emotions* (pp. 144–163). New York, NY: Cambridge University Press. doi: 10.1017/CBO9780511819568.009

Antonucci, T. C. (2001). Social relations: An examination of social networks, social support, and sense of control. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (pp. 427–453). San Diego, CA: Academic Press.

Baird, B. M., Lucas, R. E., & Donnellan, M. B. (2010). Life satisfaction across the lifespan: Findings from two nationally representative panel studies. *Social Indicators Research, 99,* 183–203. doi: 10 .1007/s11205-010-9584-9

Baltes, P. B. (1987). Theoretical propositions of life-span developmental psychology: On the dynamics between growth and decline. *Developmental Psychology, 23,* 611–626. doi: 10.1037/0012-1649.23.5.611

Baltes, M. M., & Baltes, P. B. (1986). *The psychology of control and aging*. Hillsdale, NJ: Erlbaum.

Baltes, M. M., & Carstensen, L. L. (1999). Social psychological theories and their applications to aging: From individual to collective social psychology. In V. L. Bengtson & K. W. Schaie (Eds.), *Handbook of theories of aging* (pp. 209–226). New York, NY: Springer.

Baltes, P. B., & Staudinger, U. M. (Eds.). (1996). *Interactive minds: Life-span perspectives on the social foundation of cognition*. New York, NY: Cambridge University Press.

Barsade, S. G. (2002). The ripple effect: Emotional contagion and its influence on group behavior. *Administrative Science Quarterly, 47*, 644–675. doi: 10.2307/3094912

Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of general psychology*, *5*, 323–370. doi: 10.1037/1089-2680.5.4.323

Berg, C. A., Meegan, S. P., & Deviney, F. P. (1998). A social-contextual model of coping with everyday problems across the lifespan. *International Journal of Behavioral Development, 22*, 239–261. doi: 10.1080/016502598384360

Berg, C. A., & Upchurch, R. (2007). A developmental-contextual model of couples coping with chronic illness across the adult life span. *Psychological Bulletin, 133,* 920–954. doi: 10.1037/0033-2909.133.6.920

Berg, C. A., Wiebe, D. J., & Butner, J. (2011). Affect covariation in marital couples dealing with stressors surrounding prostate cancer. *Gerontology, 57*, 167–172. doi: 10.1159/000318642

Bergeman, C. S., & Bisconti, T. L. (2005). Unique effects of daily perceived control on anxiety symptomatology during conjugal bereavement. *Personality and Individual Differences*, *38,* 1057–1067. doi:10.1016/j.paid.2004.07.004

Bolger, N., & Laurenceau, J.-P. (2013). *Intensive longitudinal methods: An introduction to diary and experience sampling research*. New York, NY: Guilford Press.

Bookwala, J., & Schulz, R. (1996). Spousal similarity in subjective well-being: The cardiovascular health study. *Psychology and Aging, 11*, 582–590. doi: 10.1037/0882-7974.11.4.582

Botwin, M. D., Buss, D. M., & Shackelford, T. K. (1997). Personality and mate preferences: Five factors in mate selection and marital satisfaction. *Journal of Personality, 65,* 107–136. doi: 10.1111/j.1467- 6494.1997.tb00531.x

Brinberg, M., Ram, N., Hülür, G., Brick, T. R., & Gerstorf, D. (2017). Analyzing dyadic data using grid-sequence analysis: Inter-dyad differences in intra-dyad dynamics. *Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, *73,* 5–18. doi: 10.1093/geronb/gbw160

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by design and nature*. Cambridge, MA: Harvard University Press.

Bronfenbrenner, U. (1986). Recent advances in research on the ecology of human development. In R. K. Silbereisen, K. Eyferth, & G. Rudinger (Eds.), *Development as action in context*. Berlin-Heidelberg, Germany: Springer. doi: 10.1093/geronb/gby009/4838962

Brose, A., Voelkle, M.C., Lövdén, M., Lindenberger, U., & Schmiedek, F. (2015). Differences in the between-person and within-person structures of affect are a matter of degree. *European Journal of Personality*, *29,* 55–71. doi: 10.1002/per.1961

Brown, S. L., & Lin, I. F. (2012). The gray divorce revolution: Rising divorce among middle-aged and older adults, 1990-2010. *Journals of Gerontology: Series B, Psychological Sciences and Social Sciences, 67,* 731–741. doi: 10.1093/geronb/gbs089

Butler, E. A. (2015). Interpersonal affect dynamics: It takes two (and time) to tango. *Emotion Review, 7,* 336–341. doi: 10.1177/1754073915590622

Butler, E. A., & Randall, A. K. (2013). Emotional coregulation in close relationships. *Emotion Review, 5,* 202–210. doi: 10.1177/1754073912451630

Butterworth, P., & Rodgers, B. (2006). Concordance in the mental health of spouses: Analysis of a large national household panel survey. *Psychological Medicine*, *36,* 685–697. doi: 10.1017/s0033291705006677

Bye, D., & Pushkar, D. (2009). How need for cognition and perceived control is differentially linked to emotional outcomes in the transition to retirement. *Motivation and Emotion*, *33,* 320–332. doi: 10.1007/s11031-009-9135-3

Caplan, L. J., & Schooler, C. (2003). The roles of fatalism, self-confidence, and intellectual resources in the disablement process in older adults. *Psychology and Aging*, *18,* 551–561. doi: 10.1037/0882-7974.18.3.551

Carr, D., Freedman, V. A., Cornman, J. C., & Schwarz, N. (2014). Happy marriage, happy life? Marital quality and subjective well-being in later life. *Journal of Marriage and Family, 76,* 930–948. doi: 10.1111/jomf.12133

Carstensen, L. L. (1992). Social and emotional patterns in adulthood: Support for socioemotional selectivity theory. *Psychology and Aging, 7,* 331–338. doi: 10.1037/0882-7974.7.3.331

Carstensen, L. L., Gottman, J. M., & Levenson, R. W. (1995). Emotional behavior in long-term marriage. *Psychology and Aging, 10,* 140–149. doi: 10.1037/0882-7974.10.1.140

Carstensen, L. L., Graff, J., Levenson, R. W., & Gottman, J. M. (1996). Affect in intimate relationships: The developmental course of marriage. In C. Magai & S. H. McFadden (Eds.), *Handbook of emotion, adult development, and aging* (pp. 227–247). San Diego, CA: Academic Press.

Carstensen, L. L., Turan, B., Scheibe, S., Ram, N., Ersner-Hershfield, H., Samanez-Larkin, G. R., ... & Nesselroade, J. R. (2011). Emotional experience improves with age: Evidence based on over 10 years of experience sampling. *Psychology and Aging*, *26*, 21–33. doi: 10.1037/a0021285

Charles, S. T. (2010). Strength and vulnerability integration: A model of emotional well-being across adulthood. *Psychological Bulletin*, *136,* 1068–1091. doi: 10.1037/a0021232

Cheung, F., & Lucas, R. E. (2014). Assessing the validity of single-item life satisfaction measures: Results from three large samples. *Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care & Rehabilitation, 23,* 2809–2818. doi: 10.1007/s11136-014-0726-4

Choi, H., Yorgason, J. B., & Johnson, D. R. (2016). Marital quality and health in middle and later adulthood: Dyadic associations. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, *71*, 154–164. doi: 10.1093/geronb/gbu222

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98,* 310–357. doi: 10.1037/0033-2909.98.2.310

Costa, P. T., Jr, Zonderman, A. B., McCrae, R. R., Cornoni-Huntley, J., Locke, B. Z., & Barbano, H. E. (1987). Longitudinal analyses of psychological well-being in a national sample: Stability of mean levels. *Journal of Gerontology*, *42,* 50–55. doi: 10.1093/geronj/42.1.50

Desai, S., Schimmack, U., Jidkova, S., & Bracke, P. (2012). Spousal similarity in depression: A dyadic latent panel analysis of the panel study of Belgian households. *Journal of Abnormal Psychology, 121,* 309–314. doi: 10.1037/a0025575

Diehl, M., Hay, E. L., & Chui, H. (2012). Personal risk and resilience factors in the context of daily stress. In B. Hayslip & G. C. Smith (Eds.), *Annual review of gerontology and geriatrics (Vol. 32). Emerging perspectives on resilience in adulthood and later life* (pp. 251–274). New York, NY: Springer Publishing.

Diener, E., Inglehart, R., & Tay, L. (2013). Theory and validity of life satisfaction scales. *Social Indicators Research, 112,* 497–527. doi: 10.1007/s11205-012-0076-y

Diener, E., Lucas, R. E., & Scollon, C. N. (2006). Beyond the hedonic treadmill: Revising the adaptation theory of well-being. *American Psychologist, 61,* 305–314. doi: 10.1037/0003-066X.61.4.305

Diener, E., & Seligman, M. E. (2002). Very happy people. *Psychological Science, 13,* 81–84. doi: 10.1111/1467-9280.00415

Dixon, R. A. (1999). Exploring cognition in interactive situations: The aging of N+1 minds. In T. M. Hess & F. Blanchard-Fields (Eds.), *Social cognition and aging* (pp. 267–290). San Diego, CA: Academic Press. doi: 10.1016/B978-012345260-3/50013-6

Drewelies, J., Chopik, W. J., Hoppmann, C. A., Smith, J. & Gerstorf, D. (2016). Linked lives: Dyadic associations of mastery beliefs with health (behavior) and health (behavior) change among older partners. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*. doi: 10.1093/geronb/gbw058

Drewelies, J., Schade, H., Hülür, G., Hoppmann, C. A., Ram, N., & Gerstorf, D. (2018). The more we are in control, the merrier? Partner perceived control and negative affect in the daily lives of older couples. *The Journals of Gerontology: Series B*. doi: 10.1093/geronb/gby009

Drewelies, J., Wagner, J., Tesch-Römer, C., Heckhausen, J., & Gerstorf, D. (2017). Perceived control across the second half of life: The role of physical health and social integration. *Psychology and Aging*, *32,* 76–92. doi: 10.1037/pag0000143

Eizenman, D. R., Nesselroade, J. R., Featherman, D. L., & Rowe, J. W. (1997). Intraindividual variability in perceived control in an older sample: The MacArthur successful aging studies. *Psychology and Aging, 12,* 489–502. doi: 10.1037/0882-7974.12.3.489

Erber, R., Wegner, D. M., & Therriault, N. (1996). On being cool and collected: Mood regulation in anticipation of social interaction. *Journal of Personality and Social Psychology, 70,* 757–766. doi: 10.1037/0022-3514.70.4.757

Fischer, A. H., & Van Kleef, G. A. (2010). Where have all the people gone? A plea for including social interaction in emotion research. *Emotion Review, 2*, 208–211. doi: 10.1177/1754073910361980

Fong, J. H., Sherris, M., & Yap, J. (2015). Forecasting disability: Application of a frailty model. *Scandinavian Actuarial Journal*. Advance online publication. doi: 10.1080/03461238.2015.1092168

Fredrickson, B. L., & Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition and Emotion, 19,* 313–332. doi: 10.1080/02699930441000238

Fujita, F., Diener, E., & Sandvik, E. (1991). Gender differences in negative affect and well-being: The case for emotional intensity. *Journal of Personality and Social Psychology*, *61,* 427–434. doi:10.1037/0022-3514.61.3.427

Gatz, M., & Karel, M. J. (1993). Individual change in perceived control over 20 years. *International Journal of Behavioral Development, 16*, 305–322. doi: 10.1177/016502549301600211

Genadek, K. R., Flood, S. M., & Moen, P. (2017). For better or worse? Couples' time together in encore adulthood. *The Journals of Gerontology: Series B, 74*, 329–338. doi: 10.1093/geronb/gbx129

Gerstorf, D., Heckhausen, J., Ram, N., Infurna, F. J., Schupp, J., & Wagner, G. G. (2014). Perceived personal control buffers terminal decline in well-being. *Psychology and Aging, 29,* 612–625. doi: 10.1037/a0037227

Gerstorf, D., Hoppmann, C. A., & Ram, N. (2014). The promise and challenges of integrating multiple time-scales in adult developmental inquiry. *Research in Human Development*, *11,* 75–90. doi: 10.1080/15427609.2014.906725

Gerstorf, D., Windsor, T. D., Hoppmann, C. A., & Butterworth, P. (2013). Longitudinal change in spousal similarities in mental health: Between-couple and within-couple perspectives. *Psychology and Aging, 28,* 540–554. doi: 10.1037/a0032902

Gonzaga, G. C., Campos, B., & Bradbury, T. (2007). Similarity, convergence, and relationship satisfaction in dating and married couples. *Journal of Personality and Social Psychology, 93,* 34–48. doi: 10.1037/0022-3514.93.1.34

Gottman, J. M., Coan, J., Carrere, S., & Swanson, C. (1998). Predicting marital happiness and stability from newlywed interactions. *Journal of Marriage and the Family, 60,* 5–22. doi: 10.2307/353438

Guven, C., Senik, C., & Stichnoth, H. (2012). You can't be happier than your wife. Happiness gaps and divorce. *Journal of Economic Behavior & Organization, 82,* 110–130. doi: 10.1016/j.jebo.2012.01.003

Haisken-DeNew, J., & Frick, J. R. (2005). *DTC desktop companion to the German Socio-Economic Panel (SOEP)*. Berlin, Germany: German Institute for Economic Research. Retrieved from www.diw.de/documents/dokumentenarchiv/17/diw_01.c.38951.de/dtc.409713.pdf

Hamaker, E. L., Nesselroade, J. R., & Molenaar, P. C. M. (2007). The integrated trait-state model. *Journal of Research in Personality, 41,* 295–315. doi: 10.1016/j.jrp.2006.04.003

Havens, E. M. (1973). Women, work, and wedlock: A note on female marital patterns in the United States. *American Journal of Sociology, 78,* 975–981. doi: 10.1086/225414

Hawkins, A. J., Willoughby, B. J., & Doherty, W. J. (2012). Reasons for divorce and openness to marital reconciliation. *Journal of Divorce & Remarriage, 53,* 453–463. doi: 10.1080/10502556.2012.682898

Hay, E. L., & Diehl, M. (2010). Reactivity to daily stressors in adulthood: The importance of stressor type in characterizing risk factors. *Psychology and Aging, 25*, 118–131. doi: 10.1037/a0018747

Headey, B., Muffels, R., & Wagner, G. G. (2010). Long-running German panel survey shows that personal and economic choices, not just genes, matter for happiness. *Proceedings of the National Academy of Sciences, USA, 107,* 17922–17926. doi: 10.1073/pnas.1008612107

Helm, J. L., Sbarra, D., & Ferrer, E. (2012). Assessing cross-partner associations in physiological responses via coupled oscillator models. *Emotion*, *12,* 748–762. doi: 10.1037/a0025036

Hertzog, C., Kramer, A. F., Wilson, R. S., & Lindenberger, U. (2008). Enrichment effects on adult cognitive development. *Psychological Science in the Public Interest, 9,* 1–65. doi: 10.1111/j.1539-6053.2009.01034.x

Hoffman, L., & Stawski, R. S. (2009). Persons as contexts: Evaluating between-person and within-person effects in longitudinal analysis. *Research in Human Development, 6,* 97–120. doi: 10.1080/15427600902911189

Hoppmann, C. A., & Gerstorf, D. (2013). Spousal goals, affect quality, and collaborative problem solving: Evidence from a time-sampling study with older couples. *Research in Human Development, 10,* 70–87. doi: 10.1080/15427609.2013.760260

Hoppmann, C., & Gerstorf, D. (2014). Bio-behavioral pathways underlying spousal health dynamics: Their nature, correlates, and consequences. *Gerontology, 60,* 458–465. doi: 10.1159/000357671

Hoppmann, C. A., & Gerstorf, D. (2016). Social interrelations in aging: The sample case of married couples. In K. W. Schaie & S. L. Willis (Eds.), *Handbook of the Psychology of Aging* (8th ed., pp. 263–277). San Diego, CA: Elsevier. doi: 10.1016/B978-0-12-411469-2.00014-5

Hoppmann, C., Gerstorf, D., & Luszcz, M. (2011). Dyadic interrelations in lifespan development and aging: How does 1 + 1 make a couple? – Introduction. *Gerontology, 57,* 144–147. doi:10.1159/000320324

Hoppmann, C., Gerstorf, D., Willis, S. L., & Schaie, K. W. (2011). Spousal interrelations in happiness in the Seattle Longitudinal Study: Considerable similarities in levels and changes over time. *Developmental Psychology, 47,* 1–8. doi: 10.1037/a0020788

Hoyer, W. J., Stawski, R. S., Wasylyshyn, C., & Verhaeghen, P. (2004). Adult age and digit symbol substitution performance: A meta-analysis. *Psychology and Aging*, *19,* 211–214. doi: 10.1037/0882-7974.19.1.211

Hülür, G., Hoppmann, C. A., Rauers, A., Schade, H., Ram, N., & Gerstorf, D. (2016). Empathic accuracy for happiness in the daily lives of older couples: Fluid cognitive performance predicts pattern accuracy among men. *Psychology and Aging*, *31*, 545–552. doi:10.1037/pag0000109

Hülür, G., Infurna, F. J., Ram, N., & Gerstorf, D. (2013). Cohorts based on decade of death: No evidence for secular trends favoring later cohorts in cognitive aging and terminal decline in the AHEAD study. *Psychology and Aging, 28,* 115–127. doi: 10.1037/a0029965

Humbad, M. N., Donnellan, M. B., Iacono, W. G., McGue, M., & Burt, S. A. (2010). Is spousal similarity for personality a matter of convergence or selection? *Personality and Individual Differences, 49,* 827–830. doi: 10.1016/j.paid.2010.07.010

Humbad, M. N., Donnellan, M. B., Iacono, W. G., McGue, M., & Burt, S. A. (2013). Quantifying the association between personality similarity and marital adjustment using profile correlations: A cautionary tale. *Journal of Research in Personality, 47,* 97–106. doi: 10.1016/j.jrp.2012.09.007

Huntsinger, J. R., Lun, J., Sinclair, S., & Clore, G. L. (2009). Contagion without contact: Anticipatory mood matching in response to affiliative motivation. *Personality and Social Psychology Bulletin*, *35*, 909–922. doi:10.1177/0146167209335299

Infurna, F. J., Gerstorf, D., Ram, N., Schupp, J., & Wagner, G. G. (2011). Long-term antecedents and outcomes of perceived control. *Psychology and Aging, 26,* 559–575. doi: 10.1037/a0022890

Kalmijn, M., & Poortman, A. R. (2006). His or her divorce? The gendered nature of divorce and its determinants. *European Sociological Review, 22,* 201–214. doi: 10.1093/esr/jci052

Kelley, H. H., & Thibaut, J. W. (1978). *Interpersonal relations: A theory of interdependence*. New York, NY: Wiley.

Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic data analysis*. New York, NY: Guilford Press.

Kessler, E. M., & Staudinger, U. M. (2009). Affective experience in adulthood and old age: The role of affective arousal and perceived affect regulation. *Psychology and Aging*, *24,* 349–362. doi: 10.1037/a0015352

Kiecolt-Glaser, J. K., & Wilson, S. J. (2017). Lovesick: How couples' relationships influence health. *Annual Review of Clinical Psychology, 13,* 421–443. doi: 10.1146/annurev-clinpsy-032816-045111

Koffer, R., Drewelies, J., Almeida, D., Conroy, D., Pincus, A., Gerstorf, D., & Ram, N. (2017). The role of general and daily control beliefs for affective stressor-reactivity across adulthood and old age. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*. doi: 10.1093/geronb/gbx055

Kouros, C. D., & Papp, L. M. (2019). Couples' perceptions of each other's daily affect: Empathic accuracy, assumed similarity, and indirect accuracy. *Family Process*, *58*, 179–196. doi: https://doi.org/10.1111/famp.12344

Kroh, M. (2006). *An experimental evaluation of popular well-being measures*. (DIW Discussion Papers No. 546). Berlin, Germany: German Institute for Economic

Research. Retrieved from http://www.diw.de/documents/publikationen/73/43968/dp546.pdf

Kroh, M. (2014). *Documentation of sample sizes and panel attrition in the German Socio-Economic Panel (SOEP) (1984 until 2012)* (SOEP Survey Papers 177: Series D). Berlin, Germany: DIW/SOEP. Retrieved from http://panel.gsoep.de/soep-docs/surveypapers/diw_ssp0177.pdf

Kunzmann, U. (2008). Differential age trajectories of positive and negative affect: Further evidence from the Berlin Aging Study. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 63,* 261–270. doi: 10.1093/geronb/63.5.p261

Kunzmann, U., Little, T., & Smith, J. (2002). Perceiving control: A double-edged sword in old age. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, *57,* 484–491. doi: 10.1093/geronb/57.6.p484

Lachman, M. E. (2006). Perceived control over aging-related declines: Adaptive beliefs and behaviors. *Current Directions in Psychological Science, 15,* 282–286. doi: 10.1111/j.1467-8721.2006.00453.x

Lachman, M. E., Neupert, S. D., & Agrigoroaei, S. (2012). The relevance of a sense of control for health and aging. In K. W. Schaie & S. L. Willis (Eds.), *Handbook of the psychology and aging* (7th edition, pp. 175–190). New York, NY: Elsevier. doi: 10.1016/B978-0-12-380882-0.00011-5

Lachman, M. E., & Weaver, S. L. (1998). Sociodemographic variations in the sense of control by domain: Findings from the MacArthur studies of midlife. *Psychology and Aging*, *13,* 553–562. doi:10.1037/0882-7974.13.4.553

Lang, F. R. (2001). Regulation of social relationships in later adulthood. *Journals of Gerontology: Series B, Psychological Sciences and Social Sciences, 56,* 321–326. doi: 10.1093/geronb/56.6.P321

Larson, R. W., & Almeida, D. M. (1999). Emotional transmission in the daily lives of families: A new paradigm for studying family process. *Journal of Marriage and the Family*, *61,* 5–20. doi:10.2307/353879

Larson, R. W., & Richards, M. H. (1994). Family emotions: Do young adolescents and their parents experience the same states? *Journal of Research on Adolescence, 4,* 567–583. doi: 10.1207/ s15327795jra0404_8

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, NY: Springer.

Littell, R. C., Milliken, G. A., Stroup, W. W., Wolfinger, R. D., & Schabenberger, O. (2006). *SAS for mixed models* (2nd ed.). Cary, NC: SAS Institute.

Little, R. J. A., & Rubin, D. B. (1987). *Statistical analysis with missing data*. New York, NY: Wiley.

Liu, S., Rovine, M. J., Klein, L. C., & Almeida, D. M. (2013). Synchrony of diurnal cortisol pattern in couples. *Journal of Family Psychology, 27*, 579–588. doi: 10.1037/a0033735

Locke, K. D., & Horowitz, L. M. (1990). Satisfaction in interpersonal interactions as a function of similarity in level of dysphoria. *Journal of personality and social psychology, 58,* 823–831. doi: 10.1037/0022-3514.58.5.823

Lounsbury, J. W., Sundstrom, E., Loveland, J. M., & Gibson, L. W. (2003). Intelligence, "Big Five" personality traits, and work drive as predictors of course grade. *Personality and Individual Differences, 35,* 1231–1239. doi: 10.1016/S0191-8869(02)00330-6

Lucas, R. E. (2007). Long-term disability is associated with lasting changes in subjective well-being: Evidence from two nationally representative longitudinal studies. *Journal of Personality and Social Psychology, 92,* 717–730. doi: 10.1037/0022-3514.92.4.717

Lucas, R. E., & Donnellan, M. B. (2012). Estimating the reliability of single-item life satisfaction measures: Results from four national panel studies. *Social Indicators Research, 105,* 323–331. doi: 10 .1007/s11205-011-9783-z

Luo, S., & Klohnen, E. C. (2005). Assortative mating and marital quality in newlyweds: A couple-centered approach. *Journal of Personality and Social Psychology, 88,* 304–326. doi: 10.1037/0022-3514.88.2.304

Luong, G., Charles, S. T., & Fingerman, K. L. (2010). Better with age: Social relationships across adulthood. *Journal of Social and Personal Relationships, 28,* 9–23. doi: 10.1177/0265407510391362

McArdle, J. J. (1988). Dynamic but structural equation modelling of repeated measures data. In J. R. Nesselroade & R. B. Cattell (Eds.), *Handbook of multivariate experimental psychology* (Vol. 2, pp. 561– 614). New York, NY: Plenum Press. doi: 10.1007/978-1-4613-0893-5_17

McArdle, J. J. (1994). Structural factor analysis experiments with incomplete data. *Multivariate Behavioral Research, 29,* 409–454. doi: 10.1207/s15327906mbr2904_5

Meegan, S. P., & Berg, C. A. (2002). Contexts, functions, forms, and processes of collaborative everyday problem solving in older adulthood. *International Journal of Behavioral Development, 26,* 6–15. doi: 10.1080/01650250143000283

Mejía, S. T., & Gonzalez, R. (2017). Couples' shared beliefs about aging and implications for future functional limitations. *The Gerontologist*, *57*, 149–159. doi: 10.1093/geront/gnx071

Meyer, I. H., & Wilson, P. A. (2009). Sampling lesbian, gay, and bisexual populations. *Journal of Counseling Psychology, 56,* 23–31. doi: 10.1037/a0014587

Michalowski, V. I., Hoppmann, C. A., & Gerstorf, D. (2014). Associations between perceived support in older adult marriages and dyadic covariations in momentary affect and aches. *Journals of Gerontology: Series B, Psychological Sciences and Social Sciences, 71,* 425–430. doi: 10.1093/geronb/gbu151

Myers, D. G., & Diener, E. (1995). Who is happy? *Psychological Science, 6,* 10–19. doi: 10.1111/j.1467-9280.1995.tb00298.x

Nesselroade, J. R. (1991). Interindividual differences in intraindividual change. In L. M. Collins & J. L. Horn (Eds.), *Best methods for the analysis of change: Recent advances, unanswered questions, future directions* (pp. 92–105). Washington, DC, US: American Psychological Association. doi: 10.1037/10099-006

Neupert, S. D., Almeida, D. M., & Charles, S. T. (2007). Age differences in reactivity to daily stressors: The role of personal control. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences, 62,* 216–225. doi: 10.1093/geronb/62.4.p216

Ong, A. D., Bergeman, C. S., & Bisconti, T. L. (2005). Unique effects of daily perceived control on anxiety symptomatology during conjugal bereavement. *Personality and Individual Differences, 38,* 1057–1067. doi: 10.1016/j.paid.2004.07.004

Peek, M. K., Stimpson, J. P., Townsend, A. L., & Markides, K. S. (2006). Well-being in older Mexican American spouses. *The Gerontologist, 46,* 258–265. doi: 10.1093/geront/46.2.258

Pinquart, M., & Sörensen, S. (2006). Gender differences in caregiver stressors, social resources, and health: An updated meta-analysis. *Journals of Gerontology: Series B, Psychological Sciences and Social Sciences, 61,* 33–45. doi: 10.1093/geronb/61.1.P33

Rammstedt, B., Spinath, F., Richter, D., & Schupp, J. (2013). Partnership longevity and personality congruence in couples. *Personality and Individual Differences, 54,* 832–835. doi: 10.1016/j.paid.2012.12.007

Repetti, R., Wang, S. W., & Saxbe, D. (2009). Bringing it all back home: How outside stressors shape families' everyday lives. *Current Directions in Psychological Science, 18,* 106–111. doi: 10.1111/j.1467-8721.2009.01618.x

Roberts, B. W., Smith, J., Jackson, J. J., & Edmonds, G. (2009). Compensatory conscientiousness and health in older couples. *Psychological Science*, *20,* 553–559. doi: 10.1111/j.1467-9280.2009.02339.x

Röcke, C., Li, S. C., & Smith, J. (2009). Intraindividual variability in positive and negative affect over 45 days: Do older adults fluctuate less than young adults? *Psychology and Aging, 24*, 863–878. doi: 10.1037/a0016276

Roepke, S. K., & Grant, I. (2011). Toward a more complete understanding of the effects of personal mastery on cardiometabolic health. *Health Psychology: Official Journal of the Division of Health Psychology, American Psychological Association*, *30,* 615–632. doi: 10.1037/a0023480

Ross, C. E., & Mirowsky, J. (1992). Households, employment, and the sense of control. *Social Psychology Quarterly*, *55,* 217–235. doi: 10.2307/2786793

Ross, C. E., & Mirowsky, J. (2002). Age and the gender gap in the sense of personal control. *Social Psychology Quarterly*, *65,* 125–145. doi: 10.2307/3090097

Rowe, J. W., & Kahn, R. L. (1997). Successful aging. *The Gerontologist, 37,* 433–440. doi: 10.1093/geront/37.4.433

Rusbult, C. E. (1983). A longitudinal test of the investment model: The development (and deterioration) of satisfaction and commitment in heterosexual involvements. *Journal of Personality and Social Psychology, 45,* 101–117. doi: 10.1037/0022-3514.45.1.101

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American Psychologist*, *55,* 68–78. doi: 10.1037/0003-066x.55.1.68

Saxbe, D., & Repetti, R. L. (2010). For better or worse? Coregulation of couples' cortisol levels and mood states. *Journal of Personality and Social Psychology, 98,* 92–103. doi: 10.1037/a0016959

Schachter, S. (1959). *The psychology of affiliation. Experimental studies of the sources of gregariousness*. Palo Alto, CA, US: Stanford Univ. Press.

Schade, H. M., Hülür, G., Infurna, F. J., Hoppmann, C. A., & Gerstorf, D. (2016). Partner dissimilarity in life satisfaction: Stability and change, correlates, and outcomes. *Psychology and Aging*, *31*, 327–339. doi: 10.1037/pag0000096

Schimmack, U., & Lucas, R. E. (2010). Environmental influences on well-being: A dyadic latent panel analysis of spousal similarity. *Social Indicators Research, 98,* 1–21. doi: 10.1007/s11205-009- 9516-8

Schoebi, D., & Randall, A. K. (2015). Emotional dynamics in intimate relationships. *Emotion Review, 7*, 342–348. doi: 10.1177/1754073915590620

Sels, L., Ceulemans, E., Bulteel, K., & Kuppens, P. (2016). Emotional interdependence and well-being in close relationships. *Frontiers in Psychology, 7,* 283. doi: 10.3389/fpsyg.2016.00283

Sels, L., Ceulemans, E., & Kuppens, P. (2018*)*. A general framework for capturing interpersonal emotion dynamics: Associations with psychological and relational adjustment. In A. K. Randall & D. Schoebi (Eds.), *Interpersonal emotion dynamics in close relationships* (pp. 27–46). doi: 10.1017/9781316822944.004

Sheldon, K. M., Elliot, A. J., Kim, Y., & Kasser, T. (2001). What is satisfying about satisfying events? Testing 10 candidate psychological needs. *Journal of Personality and Social Psychology*, *80,* 325–339. doi: 10.1037//O022-3514.80.2.325

Skinner, E. A. (1996). A guide to constructs of control. *Journal of Personality and Social Psychology, 71,* 549–570. doi:10.1037/0022-3514.71.3.549

Stutzer, A., & Frey, B. S. (2006). Does marriage make people happy, or do happy people get married? *Journal of Socio-Economics, 35,* 326–347. doi: 10.1016/j.socec.2005.11.043

Tambs, K., & Moum, T. (1992). No large convergence during marriage for health, lifestyle, and personality in a large sample of Norwegian spouses. *Journal of Marriage and the Family, 54,* 957–971. doi: 10 .2307/353175

Tiedens, L. Z., & Fragale, A. R. (2003). Power moves: Complementarity in dominant and submissive nonverbal behavior. *Journal of Personality and Social Psychology, 84,* 558–568. doi: 10.1037/0022- 3514.84.3.558

Tighe, C. A., Dautovich, N. D., & Allen, R. S. (2015). Regularity of daily activities buffers the negative impact of low perceived control on affect. *Motivation and Emotion*, *39,* 448–457. doi: 10.1007/s11031-014-9456-8

Townsend, S. S., Kim, H. S., & Mesquita, B. (2014). Are you feeling what I'm feeling? Emotional similarity buffers stress. *Social Psychological and Personality Science*, *5*, 526–533. doi: 10.1177/194855061351149910.1177/1948550613511499

Tucker-Drob, E. M., Briley, D. A., Starr, J. M., & Deary, I. J. (2014). Structure and correlates of cognitive aging in a narrow age cohort. *Psychology and Aging*, *29,* 236–249. doi: 10.1037/a0036187

Vargas Lascano, D. I., Galambos, N. L., Krahn, H. J., & Lachman, M. E. (2015). Growth in perceived control across 25 years from the late teens to midlife: The role of personal and parents' education. *Developmental Psychology*, *51,* 124–135. doi: 10.1037/a0038433

Verhofstadt, L. L., Buysse, A., Ickes, W., Davis, M., & Devoldre, I. (2008). Support provision in marriage: The role of emotional similarity and empathic accuracy. *Emotion, 8,* 792–802. doi:10.1037/a0013976

Voelkle, M. C., Brose, A., Schmiedek, F., & Lindenberger, U. (2014). Toward a unified framework for the study of between-person and within-person structures: Building a

bridge between two research paradigms. *Multivariate Behavioral Research*, *49*, 193–213. doi: 10.1080/00273171.2014.889593

Wagner, M., Schmid, L., & Weiss, B. (2015). Exploring increasing divorce rates in West Germany: Can we explain the iron law of increasing marriage instability? *European Sociological Review, 31,* 211–229. doi: 10.1093/esr/jcv014

Ware, J. E., Jr., & Gandek, B. (1994). The SF-36 Health Survey: Development and use in mental health research and the IQOLA project. *International Journal of Mental Health, 23,* 49–73. doi: 10.1080/00207411.1994.11449283

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54,* 1063–1070. doi: 10.1037/0022-3514.54.6.1063

Watson, D., Klohnen, E. C., Casillas, A., Simms, E. N., Haig, J., & Berry, D. S. (2004). Match makers and deal breakers: Analyses of assortative mating in newlywed couples. *Journal of Personality, 72,* 1029–1068. doi: 10.1111/j.0022-3506.2004.00289.x

Wechsler, D. (1955). *Manual for the Wechsler Adult Intelligence Scale*. New York, NY: Psychological Corporation.

Wilson, G., & Cousins, J. (2003). Partner similarity and relationship satisfaction: Development of a compatibility quotient. *Sexual and Relationship Therapy, 18,* 161–170. doi: 10.1080/1468199031000099424

Windsor, T. D., & Anstey, K. J. (2010). Age differences in psychosocial predictors of positive and negative affect: A longitudinal investigation of young, midlife, and older adults. *Psychology and Aging, 25,* 641–652. doi:10.1037/a0019431

Windsor, T. D., Ryan, L. H., & Smith, J. (2009). Individual well-being in middle and older adulthood: Do spousal beliefs matter? *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 64,* 586–596. doi: 10.1093/geronb/gbp058

Wortman, J., & Lucas, R. E (2015). Spousal similarity in life satisfaction before and after divorce. *Journal of Personality and Social Psychology, 110,* 625–633. doi: 10.1037/pspp0000065

Running head: PARTNER DISSIMILARITY IN WELL-BEING

Partner Dissimilarity in Life Satisfaction: Stability and Change, Correlates, and Outcomes

Hannah M. Schade[1], Gizem Hülür[1], Frank J. Infurna[2],

Christiane A. Hoppmann[3], and Denis Gerstorf[1,4]

[1]Humboldt University, Berlin, Germany

[2]Arizona State University, Tempe, AZ, US

[3]University of British Columbia, Vancouver, B.C., Canada

[4]German Institute for Economic Research (DIW Berlin), Berlin, Germany

This article has been published in *Psychology and Aging* in 2016

Published by the American Psychological Association

http://dx.doi.org/10.1037/pag0000096

Address correspondence regarding this manuscript to: Hannah M. Schade, Humboldt University Berlin, Institute of Psychology, Rudower Chaussee 18, 12489 Berlin, Germany; phone: +49-(0)30-2093-9422; fax: +49-(0)30-2093-9351; hannah.schade@hu-berlin.de.

Abstract

Dissimilarities between partners in prominent domains of functioning are often thought to be a risk factor for compromised relationship quality and relationship dissolution. However, the nature, correlates, and consequences of developmental trajectories of within-couple dissimilarities in key quality of life indicators such as life satisfaction are not well understood. In the current study, we applied multilevel growth models to up to 31-wave annual longitudinal data from 13,714 romantic partners in the German Socio-Economic Panel (SOEP; age at baseline: $M = 43$ years, $SD = 15$, range 17-92 years). Partner dissimilarity was calculated at the within-couple level and indicated considerable differences in life satisfaction between partners within a given couple (0.64 *SD* or 1.14 units on an 11-point scale). Over time, partner dissimilarity slightly increased among partners who remained together. Examining individual and relationship correlates indicated that dissimilarity was greatest for couples who were older, had children, or had a shorter relationship history. Also, dissimilarity was greater when individual life satisfaction or satisfaction with family life was low, particularly among wives, as well as among couples who later separated. Examining consequences, larger levels of and increases in partner dissimilarity were independently predictive of lower satisfaction with family life at the end of the study, over and above individual life satisfaction of either partner as well as key individual and relationship correlates. Our discussion focuses on the advantages of investigating (developmental trajectories of) within-couple dissimilarity and its implications for individual and partner development.

Words: 241

Key words: Partner similarity; life satisfaction; relationship stability; growth modeling; longitudinal change; German Socio-Economic Panel Study; SOEP

Partner Dissimilarity in Life Satisfaction:

Stability and Change, Correlates, and Outcomes

Lifespan researchers have long acknowledged the central role of contextual factors in shaping lifespan developmental trajectories (Baltes, 1987; Bronfenbrenner, 1979). Intimate social relationships such as marriage constitute one particularly important social context (Antonucci, 2001; Berg & Upchurch, 2007; Dixon, 1999; Baltes & Carstensen, 1999; Lang, 2001). Not only do partners share their environments and many experiences (Meegan & Berg, 2002; Hoppmann & Gerstorf, 2009), they also profoundly influence each other in central life domains: for the better (e.g., emotional co-regulation: Carstensen, Gottman, & Levenson, 1995) and for the worse (e.g., contagion of negative affect: Larson & Almeida, 1999; Michalowski, Hoppmann, & Gerstorf, 2014). Previous research has established that partners show considerable similarity in happiness (Hoppmann, Gerstorf, Willis, & Schaie, 2011) and well-being (Bookwala & Schulz, 1996; Peek, Stimpson, Townsend, & Markrides, 2006; Schimmack & Lucas, 2010; Tambs & Moum, 1992; Windsor, Ryan, & Smith, 2009), two key components of successful aging (Rowe & Kahn, 1998). Importantly, such similarity in emotional well-being between partners contributes to relationship stability (e.g., Anderson, Keltner, & John, 2003; Gerstorf, Hoppmann, Windsor, & Butterworth, 2013; Guven, Senik, & Stichnoth, 2012). To better understand the nature and developmental dynamics of partner similarity, we consider it important to complement the typical between-couple difference perspective with a within-couple approach. A between-couple approach does not offer insights into the absolute size of differences between partners: Using correlation coefficients, partners may seem similar to one another at the population level or when compared to unacquainted individuals, but differences between partners within a given couple might still be of considerable size. In the current study, we make use of up to 31-wave annual longitudinal data from 13,714 romantic partners in the German Socio-Economic Panel

(SOEP) to examine stability and change, correlates, and outcomes of within-partner dissimilarity in life satisfaction. Specifically, we will (a) examine the absolute size of the difference between reports of life satisfaction from the two partners within a given romantic couple and how such differences change across three decades for partners who remain together and those who do not, (b) explore the role of relevant individual (satisfaction with life, education, and disability) and partner correlates (average age of the couple, relationship length, having children), and (c) test whether larger and increasing dissimilarities constitute independent risk factors for poor satisfaction with family life.

The Nature and Long-Term Trajectory of Partner Similarity in Life Satisfaction

Lifespan developmental theory has long noted that husbands and wives are influenced in similar ways by their living environments, life events, and the activities they share with one another (Baltes & Staudinger, 1996), all of which can be expected to result in partner similarities. Empirical studies applying a between-couple difference perspective have established that partners indeed show similarities in life satisfaction and its change (Bookwala & Schulz, 1996; Hoppmann et al., 2011; Tambs & Moum, 1992; Peek et al., 2006; Windsor et al., 2009). For example, Schimmack and Lucas (2010) reported from the German SOEP that partners' life satisfaction reports correlated on average by $r = .54$. This implies that wives who report higher life satisfaction than other wives in the sample are likely to have a husband who also feels more satisfied with life than other husbands in the population sample.

We note that such a between-couple approach and our within-couple approach have in common that data from both partners are used, be these cross-sectional or longitudinal in nature. The major difference is that a between-couple approach considers the phenomenon from a population perspective by examining the rank-order position of a given person in relation to his or her peers (e.g., a husband compared to other husbands) and linking this

rank-order position to that of his or her partner (here, the wife's rank order in relation to other wives). In contrast, a within-couple approach starts with a given couple and is concerned with the (absolute) difference between the two partners within this very unit. It is well possible that scores between partners are considerably correlated, but vastly differ from one another in absolute terms.

The use of such a discrepancy score is recommended when similarity is treated as a variable of interest in and of itself (e.g. when investigating similarity in friends' behavior; Kenny, Kashy, & Cook, 2006). Such an index also allows examining how (dis)similarity is associated with couple characteristics and outcomes such as satisfaction with family life. For example, Guven and colleagues (2012) used data from the national German SOEP to examine whether and how within-couple dissimilarity in life satisfaction was associated with the risk of separation among young and middle-age couples. The present study uses the same data set and significantly extends previous findings as follows: First, we also include older SOEP couples into our analyses and examine whether results obtained for young and middle-aged couples generalize to within-couple dissimilarity in life satisfaction among old and very old couples. Second, we examine questions revolving around developmental change and stability in within-couple dissimilarity in life satisfaction. To do so, we make use of the long-term longitudinal SOEP data to examine whether and how within-couple dissimilarity changes over time, how couples differ, and what role marital break-up and other important individual and couple characteristics plays. Third, Guven et al. (2012) linked within-couple dissimilarity in life satisfaction with subsequent risk for separation. In our study, we move to the examination of another important outcome, namely satisfaction with family life.

There is conceptual controversy about whether partners do or do not become more similar over time. Anderson and colleagues (2003) have argued that people in relationships often become more similar over time. The more time partners have been together, the more

they share – friends, housing, children, experiences; over the years, the frequent presence of the partner is likely to exert its influence on the married individual (e.g., Meegan & Berg, 2002). Interestingly, two scenarios might result. To begin with, partners may become more similar to one another, for example, by adopting joint habits and attitudes (Gottman, Coan, Carrere, & Swanson, 1998). In contrast, partners may become less similar to one another, for example, when long-term teams develop complementary ways of functioning so as to capitalize on the strengths each partner brings into the relationship (Baltes & Staudinger, 1996).

Initial evidence suggests that within-couple dissimilarities in mental health are of considerable size (an average of 0.88 *SD*) and remain relatively stable over up to nine years (Gerstorf et al., 2013). That does not necessarily imply that partners have not adapted to each other, only that after some time in the relationship, partners do not become more similar to each other (in mental health) anymore, at least on average. In the current study, we corroborate and extend these earlier findings by investigating within-couple dissimilarity in life satisfaction over up to 31 years and in relation to a number of individual and relationship correlates, and exploring whether level and changes in within-couple dissimilarities are predictive of an important relationship outcome: satisfaction with family life.

Correlates of Partner Dissimilarity Trajectories

Conceptual models and empirical evidence alike have documented that several individual and relationship factors may underlie within-couple dissimilarities in life satisfaction. To begin with, drawing on notions of socio-emotional selectivity theory, we expect similarity to be greater at older ages because older people have a preference for interacting with close social partners such as their spouse and less frequently with acquaintances and friends than younger individuals do (Carstensen, 1992). Larger partner similarity may thus results from greater partner exposure. Second, capitalizing on research

showing that disability is an important correlate of impaired well-being (Lucas, 2007), we expect that disability is also important for partner dissimilarities in well-being. However, the particular direction of such associations is unclear: Partner dissimilarity may increase if one partner is affected by disability, his or her life satisfaction is compromised, and such decline is not mirrored by the partner who manages to maintain his or her level of life satisfaction. As an alternative scenario, partner dissimilarity may be stable or even decline if both partners experience physical burdens, if the couple copes conjointly with the situation, or if the disabled person's (supposed) decline in life satisfaction drags down the life satisfaction of his or her partner. Third, we explore the effect of both partner's education. Generally, higher education has been found to relate to higher life satisfaction (Cheung & Lucas, 2014), which in turn may be associated with lower partner dissimilarity (Guven et al., 2012). On the other hand, more education may be associated with greater dissimilarity because it may allow for more independence from the partner, as stated by the independence effect model (Havens, 1973). Fourth, within-couple discrepancies do not take into account the absolute level of life satisfaction at which the difference is observed. Guven and colleagues (2012) reported from young and middle-aged couples that within-couple dissimilarity in life satisfaction was lower at higher levels of life satisfaction, possibly because positive emotions allow for building up relationship resources (Fredrickson & Branigan, 2005). For example, one partner's high life satisfaction may facilitate an emotional climate in which his or her partner thrives, too, and thus also reports high life satisfaction. Finally, it is possible that it is not only the level of well-being that makes a difference, but also who of the two partners has higher versus lower life satisfaction. In the above Guven et al. (2012) report, having a constellation of higher life satisfaction among husbands was associated with increased risk for later separation, probably because women often react more sensitively to relative deprivation and more often being the one filing for divorce.

Relationship factors such as the length of relationship, having children, satisfaction with family life, and later separation can each be assumed to be associated with partner dissimilarity. To begin with relationship length, complementarity notions would suggest that the longer partners are together, the more dissimilar they become because partners split up tasks and take over different roles. In contrast, emotional convergence theory (Anderson et al., 2003) and lifespan developmental theory (e.g., Baltes & Staudinger, 1996) propose that longer-term couples may have grown together and shared so much that they could be more similar than couples in shorter relationships. Second, having children may grant the couple a joint source of joy, stress, and sorrow. For example, if the child is suffering from a severe illness, both parents' life satisfaction will likely be hampered in similar ways. Based on the assumption that correlated emotions between children and their parents (Larson & Richards, 1994) are not entirely driven by heritability, we expect that having children may be associated with greater partner similarity in life satisfaction. Third, we consider satisfaction with family life as predictor for life satisfaction dissimilarity because it is likely that the family is a domain that contributes to how satisfied partners are with their lives. Finally, trajectories of partner dissimilarity in life satisfaction may operate as early precursors or markers of later separation. The idea that emotional convergence benefits the couple (Anderson et al., 2003) is mirrored in the common conception of couples 'falling apart', which indeed is the main reason couples cite for divorce (Hawkins, Willoughby, & Doherty, 2012). In line with these conceptual arguments, Guven et al. (2012) reported that higher levels of and increases in partner dissimilarity were indeed predictive of partner separation among young and middle-aged partners. Although we would expect a similar pattern to emerge among older partners, it will be intriguing to examine whether discrepancies are less pronounced in older ages, probably because older long-term married partners have come to terms with and adjusted to the situation.

Implications of Partner Dissimilarity Trajectories

Similarity between partners in a number of life domains, including emotional experience have been proposed to be adaptive for the well-being and the stability of the relationship (Anderson et al., 2003; Gonzaga, Campos, & Bradbury, 2007). Anderson and colleagues (2003) have argued that becoming more emotionally similar benefits the relationship because it supports coordinated thoughts and actions of partners, increases their mutual understanding, and offers validation of each others emotions, thus fostering interpersonal cohesion, attraction, and stability. Dissimilarity, in contrast, is thought to complicate joint decision-making and to increase the likelihood that the partner does things that upset the other (Kelley & Thibaut, 1978). Indeed, being dissimilar and further growing apart in terms of life satisfaction was found to predict separation (Guven et al., 2012). For example. Gerstorf and colleagues (2013) found that greater within-couple dissimilarity in mental health – as measured with subscales of the Short-Form 36 General Health Survey covering vitality, social functioning, emotional problems and general mental health (for details, see Ware et al., 1994) – was associated with elevated risks for dissolution of the partnership. However, relationship stability need not be unambiguously positive, for example, when people stay in unsatisfying or even abusive relationships (Amato & Hohmann-Marriott, 2007). In a similar vein, partner dissimilarity in well-being is certainly also relevant for other than these hard-wired outcomes of staying together or not, namely family life and satisfaction with this. It is reasonable to expect that evaluations of the relationship and interactions with the partner contribute to how satisfied people are with their lives. Because becoming more similar supposedly benefits the relationship (Anderson et al., 2003), growing less similar will make shared emotional experience, and thus understanding and coordination, increasingly more difficult and rare. As a consequence, increasing dissimilarity can be taken as being indicative of the couple falling out of sync. We would thus expect that larger baseline levels and

increasing dissimilarities between partners in life satisfaction each independently predict lower satisfaction with family life.

The Present Study

Our major objective in this study is to add a within-couple perspective to research on partner similarities in well-being. To do so, we make use of up to 31-wave annual longitudinal data from 13,714 romantic partners in the SOEP study (age at baseline: $M = 43$ years, $SD = 15$). In a first step, we will investigate the size of the absolute difference in life satisfaction between the partners within a given couple and examine how partner dissimilarity in life satisfaction changes over three decades of shared lives. In a second step, we examine the role of individual and spousal correlates for levels of and changes in partner dissimilarity and expect dissimilarity to be lower at older ages, higher individual levels of life satisfaction, in longer relationships and for couples with children, and to be fueled by worse health and husbands being more satisfied than their wives. In follow-up analyses using smaller samples, we also investigate (a) how level and trajectory differ between couples staying together vs. splitting up, and (b) how the model is affected when controlling for satisfaction with family life. In a final step, we investigate implications arising from trajectories of partner dissimilarity in life satisfaction. Specifically, we examine whether larger baseline levels and increasing dissimilarities between partners predict compromised satisfaction with family life independently of one another and independent of key individual and spousal correlates.

Method

We applied multilevel growth curve models to up to 31 annual waves (collected between 1984 and 2014) from the German SOEP study. A complete description of the panel, including its design, participants, variables, and assessment procedures are published in

Headey, Muffels, & Wagner (2010). Select details relevant to the present study are presented below.

Participants and Procedure

The SOEP is a household panel with data available for annual waves since 1984 and roughly 50,000 participants (Haisken-DeNew & Frick, 2005), providing for an overall sample that is representative of the population living in private households in Germany (Kroh, 2014). Participating households were selected via a random route procedure performed in randomly selected geographic locations in Germany. Every household member aged 16 years or above was asked to participate. Initial response rates were high (60% – 70%) and attrition was relatively low (approx. 15% for the second wave and max. 5% yearly attrition). Data were primarily collected via face-to-face interviews.

For the present study, only romantic couples were analyzed where both partners lived together and provided information on all variables for at least one occasion within the first 31 waves of the study, resulting in a sample of 13,714 couples or 27,428 participants. Data are included in our study for every wave in which both partners reported life satisfaction, from the first wave a relationship is reported until a separation is reported. Age was calculated as the couple's average at baseline and ranged from 17 to 92 years, with $M = 43.25$ years ($SD = 14.97$). At baseline, 67.92% of the couples were married; these couples had been married on average for 20 years at study entry ($SD = 14.06$, range: 0 – 70). On average, couples contributed data for 9.13 waves ($SD = 7.60$, range: 1 – 31); 70% of the sample contributed data for three waves or more, and 50% contributed 7 waves of data or more. Longitudinally, SOEP couples who contributed data to more than seven waves were older at baseline ($d = 0.16$), reported a greater degree of disability ($d_{wives} = 0.20$; $d_{husbands} = 0.23$) and education ($d_{wives} = 0.06$; $d_{husbands} = 0.08$), were more likely to have children ($d = 0.18$) and had longer relationships ($d = 0.31$), reported higher life satisfaction ($d_{wives} = 0.14$; $d_{husbands} = 0.17$) and

satisfaction with family life ($d_{wives} = 0.17$; $d_{husbands} = 0.25$) and a smaller dissimilarity in life satisfaction ($d = -0.09$) than participants contributing data to seven or less waves. There were no significant differences regarding which partner had a higher level of life satisfaction. We note that results obtained from our sample may not generalize to less positively selected segments of the couple population.

Measures

Life satisfaction was assessed using responses to the item: 'How satisfied are you with your life, all things considered?', rated on an 11-point scale ranging from 0 (= completely dissatisfied) to 10 (= completely satisfied; Kroh, 2006). Life satisfaction scores were standardized to a T metric ($M = 50$, $SD = 10$), using the baseline average of women ($M = 7.54$, $SD = 1.82$) and men ($M = 7.47$, $SD = 1.80$), respectively. To index life satisfaction within a given couple, we calculated the absolute difference between both partners' (standardized) scores, subtracting one partners' life satisfaction from the other partners' life satisfaction (see Kenny et al., 2006; Gerstorf et al., 2013). Using gender-specific T-scores allowed us to express dissimilarity in life satisfaction in standard-deviation unit differences.

Correlates. We examined the role of both individual-level and couple-level predictors of dissimilarity levels and slopes. To reduce model complexity, predictors were consistently used in a time-invariant manner. As individual correlates, we used the couple's *age* at baseline by averaging husband's and wife's age ($M = 43.25$, $SD = 14.97$). *Health* was operationally defined as to which percentage participants were "officially certified as having a reduced capacity to work or being severely handicapped" (wives: $M = 9.23$, $SD = 24.11$, range = 0 – 100; husbands: $M = 13.90$, $SD = 28.34$, range = 0 – 100); 15% of wives and 23% of husbands reported any degree of disability over the course of the study. *Education* was measured by years spent in school (wives: $M = 11.57$, $SD = 2.66$, range = 7 – 18; husband: $M = 12.15$, $SD = 2.84$, range = 7 – 18). Finally, we included the *level of life satisfaction at*

baseline (wives: $M = 7.54$, $SD = 1.82$, range = 0 – 10; husbands: $M = 7.47$, $SD = 1.80$, range = 0 – 10).

As relationship correlates, the *presence of children* was assessed by whether children in the household were reported during the study (independent of whether both partners are biological parents; 53%), and *relationship length*, as indexed by how long the relationship had lasted before entering the study as a couple ($M = 13.53$ years, $SD = 14.85$, range: 0 – 64). We also investigated whether the *husband had a higher life satisfaction than his wife* at baseline. For each 30% of the couples, husbands or wives reported higher levels of life satisfaction, and the remaining 40% of couples reported the same levels of life satisfaction.

Separation. We investigate how level and trajectory in life satisfaction dissimilarity differ between couples staying together vs. couples separating. Separation was assessed by whether one partner reported a separation or divorce ($N = 1{,}067$); in contrast, couples staying together were operationalized as the partner indicator in 2014 being the same as the first relationship reported in the panel ($N = 2{,}899$). All other couples, e.g. couples where one or both partners dropped out of the study and couples where one or both partners died, were excluded from these analyses.

Satisfaction with family life. Satisfaction with family life ('How satisfied are you with your family life?', rated from 0 = 'totally unhappy' to 10 = 'totally happy') was assessed in the SOEP from 2006 on. We use satisfaction with family life in 2006 (wives: $M = 8.04$, $SD = 1.72$; husbands: $M = 8.14$, $SD = 1.59$) as a predictor for subsequent life satisfaction dissimilarity for those couples who participated in 2006 ($N = 6{,}588$ couples). Satisfaction with family life in 2014 is used as an outcome measure of dissimilarity level and trajectory for those couples who still are in the sample in 2014 ($N = 2{,}827$). Data were transformed into T-Scores for wives and husbands using the average of women ($M = 8.05$, $SD = 1.74$) and men ($M = 8.14$, $SD = 1.64$), respectively.

Statistical Procedure

Multilevel model of change. To examine the size and trajectory of partner dissimilarity in life satisfaction, we applied multilevel growth curve models (SAS Proc Mixed; Littell, Miliken, Stoup, & Wolfinger, 1996) to the partner dissimilarity index we had calculated at the within-couple level. The model was specified as

$$\text{Dissimilarity}_{tc} = \beta_{0c} + \beta_{1c}(\text{time}_{tc}) + \beta_{2c}(\text{time}^2_{tc}) + e_{tc}, \quad (1)$$

where $\text{dissimilarity}_{tc}$ represents couple *c*'s difference score in the partner's life satisfaction; β_{0c} is a couple-specific intercept parameter; β_{1c} is a couple-specific linear slope parameter that characterizes the rate of change per decade in the life satisfaction difference score; β_{2c} is a couple-specific quadratic slope parameter capturing the acceleration of change, and e_{tc} is residual error. Couple-specific intercept (β_{0c}) and linear (β_{1c}) and quadratic slope (β_{2c}) parameter were modeled at the between-couple level as

$$\beta_{0c} = \gamma_{00} + \gamma_{01}(\text{couple age}_c) + \gamma_{02}(\text{wife's health}_c) + \gamma_{03}(\text{husband's health}_c) + \gamma_{04}(\text{wife's education}_c) + \gamma_{05}(\text{husband's education}_c) + \gamma_{06}(\text{wife's life satisfaction}_c) + \gamma_{07}(\text{husband's life satisfaction}_c) + \gamma_{08}(\text{relation length}_c) + \gamma_{09}(\text{having children}_c) + \gamma_{010}(\text{husband more satisfied}_c) + u_{0c}, \quad (2)$$

$$\beta_{1c} = \gamma_{10} + \gamma_{11}(\text{couple age}_c) + \gamma_{12}(\text{wife's health}_c) + \gamma_{13}(\text{husband's health}_c) + \gamma_{14}(\text{wife's education}_c) + \gamma_{15}(\text{husband's education}_c) + \gamma_{16}(\text{wife's life satisfaction}_c) + \gamma_{17}(\text{husband's life satisfaction}_c) + \gamma_{18}(\text{relation length}_c) + \gamma_{19}(\text{having children}_c) + \gamma_{110}(\text{husband more satisfied}_c) + u_{1c}. \quad (3)$$

$$\beta_{2c} = \gamma_{20} + u_{2c}, \quad (4)$$

The covariates were grand mean-centered so that γ_{00}, γ_{10}, and γ_{20} indicated the average trajectory across all individuals. Positive parameter estimates indicate differences favoring people with higher life satisfaction, those with more education, better health and older age, as well as couples with children, a longer relationship history, and where the husband has a

higher level of life satisfaction than his wife. Residual between-couple differences u_{0c}, u_{1c}, and u_{2c} were assumed to be multivariate normally distributed, correlated with each other, and uncorrelated with the residual errors, e_{tc}. Models were estimated with SAS Proc Mixed (Littell et al., 1996) with incomplete data treated as missing at random (Little & Rubin, 1987). We note that the covariates included in our models (e.g., age, education, health) represent attrition-informative variables and so helped to accommodate longitudinal selectivity for the outcome variable of interest (i.e., missingness may have been related to these variables; McArdle, 1994). In two separate analyses, we extended the zero-order model with (a) separation, using only those participants for whom we knew whether they separated or were still together in 2014 and (b) satisfaction with family life in 2006 for couples in the study in 2006, making use of data obtained in the measurement waves from 2006 onwards.

Regressing satisfaction with family life on dissimilarity. Finally, we assessed whether a greater level or steeper increase in partner dissimilarity predicts lower levels of satisfaction with family life. To do so, we regressed satisfaction with family life in 2014 onto level of and change in dissimilarity for husbands and wives in two separate models, using only those who still were in the sample in 2014 (N = 2,827 couples). The model for wives was:

$$\text{Satisfaction with family life}_w = \beta_{0w} + \beta_{1w}(\text{similarity-level}_w) + \beta_{2w}(\text{similarity-slope}_w) + e_w \quad (5)$$

where β_{0w} is the general baseline satisfaction with family life in 2014 when all predictors are set to 0; β_{1w} represents the effect of level of dissimilarity in life satisfaction and β_{2w} represents the independent effects of this dissimilarity's development on wives' satisfaction with family life. Parallel equations were run for husbands. Satisfaction with family life was T-standardized in this analysis (M = 50, SD = 10) for husbands and wives, using the average of women (M = 8.05, SD = 1.74) and men (M = 8.14, SD = 1.64), respectively. All other

variables were grand-mean centered.

Results

The Nature and Long-Term Trajectory of Partner Dissimilarity in Life Satisfaction

Results from a multilevel model applied to multi-wave data on the dissimilarity index of partners' life satisfaction are reported in Table 1. The fixed effect for the intercept indicates a considerable difference between partners' life satisfaction ratings at baseline of 6.42 T scores, i.e. 64% of a *SD*, or a 1.14 unit distance on the 11-point life satisfaction scale (*SE* = 0.01). As illustrated in Figure 1 (Panel A), partner dissimilarity in life satisfaction only shows a small decrease in the first waves, but then steadily increases, as indicated by the significant positive linear (0.49, $p < .01$) and quadratic slopes (0.29, $p < .01$) of change per decade. As can be obtained from the random effects reported in Table 1, there were considerable between-couple differences in within-couple dissimilarity. For illustration purposes, Panel B of Figure 1 displays partner dissimilarity in life satisfaction over couple age for a selection of 15 couples, indicating that some couples are less similar than others. It can also be seen that some partners become more similar to one another, whereas others grow apart.

Correlates of Partner Dissimilarity Trajectories

Table 1 also reports results from a multilevel model that included individual and relationship correlates. In particular, we found that life satisfaction dissimilarity at baseline was larger for older couples (0.03), the greater either partner's degree of disability (wives: 0.2; husbands: 0.1), and at lower individual levels of life satisfaction (– 0.12). A longer relationship was associated with greater similarity (-0.03), couples with children reported greater dissimilarity (0.46), as did those where husbands were more satisfied than their wives (0.17). Increases in partner dissimilarity were larger for older couples (0.02) and couples with

initially high life satisfaction (wives: 0.14; husbands: 0.21) and when husbands were disabled (0.003). No differences were found for education of either partner.

In follow-up analyses using smaller samples, we also investigated differences between those partners for whom we validated that they stayed together vs. split up and examined the role of satisfaction with family life. As can be obtained from Table 2 and Figure 2, results revealed that (a) partner dissimilarity in well-being was of considerable size (intercept = 6.14) and was increasing (linear change = 0.43, quadratic change = 0.35) also among those who remained together as a couple and (b) discrepancies and increases therein were larger for those who terminated their relationship over time (intercept = 8.07; linear change = 1.78, quadratic change = 1.17). We also tested whether the separation variable interacted with age, but none of the terms reached statistical significance, suggesting that larger and increasing partner dissimilarities are also associated with spousal separation among older couples. Table 3 reports results from follow-up analyses examining the role of satisfaction with family life. As can be seen, when we used the smaller subsample of those who also had provided data on satisfaction with family life, basically the same pattern of results emerged relative to the larger sample. Of note is that higher satisfaction with family life for both wives and husbands was each associated with smaller partner dissimilarity in well-being (wives: –0.34, husbands: –0.13), but did not change the substantive interpretation of any of the major parameter estimates. We note that including both life satisfaction and family satisfaction caused problems with model convergence, probably because of collinearity. We thus removed individual levels of life satisfaction as predictors.

Implications of Partner Dissimilarity Trajectories

In a last set of analyses, we examined the predictive effects of level and change in partner dissimilarity in life satisfaction for satisfaction with family life at the most recent wave in 2014. Results obtained from regression models for husbands' and wives' satisfaction

with family life are reported in Table 4. Most important for the question under study, larger dissimilarity in well-being between partners at baseline was indeed predictive of lower satisfaction with family life, over and above the individual and relationship correlates. In particular, a one unit larger difference was associated with a 1.27 *SD* lower satisfaction with family life for wives or 0.93 *SD* for husbands. Similarly, increasing dissimilarity was uniquely associated with being less satisfied with family life (wives: –1.25, husbands: –0.57). These findings are graphically illustrated in Figure 3, using the example of women. Results also revealed that some of the individual and relationship correlates were predictive of satisfaction with family life. Interestingly, for wives' satisfaction with family life, only their own level of life satisfaction mattered significantly (1.24), while husbands' satisfaction with family life was affected by their wives' life satisfaction (0.63) almost as much as by their own (0.70). Husbands' satisfaction with family life was additionally predicted by their wives' disability (-0.03), relation length (0.07) and having children (-1.9).

Discussion

Our aim in the current study was to examine the nature, correlates, and consequences of developmental trajectories of within-couple dissimilarities in life satisfaction. We applied multilevel growth models to up to 31 waves of annual longitudinal data from initially 13,714 romantic partners in the SOEP. Partner dissimilarity was calculated at the within-couple level and showed considerable differences in life satisfaction between partners within a given couple (0.64 *SD* or 1.14 units on an 11-point scale). Over time, partner dissimilarity slightly increased among partners who remained together. Examining individual and relationship correlates indicated that dissimilarity was greater for couples who were older, had children, or had a shorter relationship history. Also, dissimilarity was greater when individual life satisfaction or satisfaction with family life was low, particularly among wives, as well as for couples who separated. These associations were only minimally altered when including

satisfaction with family life, which independently predicted lower dissimilarity. Examining consequences, larger levels of and increases in partner dissimilarity were independently predictive of lower satisfaction with family life at the end of the study, over and above individual life satisfaction of either partner as well as key individual and relationship correlates.. Our discussion focuses on the advantages of investigating (changes in) within-couple dissimilarity over time and its implications for individual and partner development.

The Nature and Long-Term Trajectory of Partner Dissimilarity in Life Satisfaction

Our study goes beyond the often-used between-couple approach in offering insights into the dynamics within couples. Focusing on the dissimilarity between partners in a given couple, we were able to show that partner similarities in life satisfaction are not absolute, but mainly relative: A considerable difference averaging at 0.64 *SD* remains between partners, which could also be expressed in 1.14 units on the 11-point life satisfaction scale. This is in line with the difference in life satisfaction Guven et al. (2012) find for young and middle-aged SOEP couples from 1984-2007. Similarly important, partners did not grow more alike over time – which goes against the common assumption of convergence; instead, they even seem to become more different on average because both the linear and quadratic slope of the growth model for the dissimilarity index were positive and reliably different from zero. Our results are in line with previous research applying a within-couple dissimilarity perspective to mental health (Gerstorf et al., 2013). There, too, partner dissimilarity did not decrease across the course of nine years; instead, it remained rather stable at approx. 0.88 *SD*. While this small effect ($d = 0.13$) in our large sample should not be overstated, it is interesting that the trend goes into the opposite direction to what several lines of research and theorizing would assume (Anderson et al., 2003; Gottman et al., 1998; Meegan & Berg, 2002). A simple explanation, supported by the significant quadratic effect indicating a small initial increase in similarity, could be that at the moment two persons start engaging in a romantic relationship,

they draw so close to each other that they reach a maximum of similarity in life satisfaction in the first years of the romantic relationship, in which the existence of the relationship itself strongly shapes the evaluation of their life satisfaction. In the years that follow, however, individuals' life satisfaction ratings may become slightly less influenced by the relationship and the partner, and their life satisfaction similarity may 'regress to the mean' or reflect the life satisfaction of two separate individuals without rose-colored glasses, each of them having their own concerns in life domains such as work and health. It is also possible that partners are able to focus more on their own lives after the initial childrearing years. That the random coefficients for the intercept, linear slope, and quadratic slope are all significant may point to the data having considerable unexplained heterogeneity. Future research could address this by exploring multiple trajectories using procedures such as growth mixture modeling, in order to identify subgroups, e.g. couples with or without children, who differ in their trajectory of dissimilarity.

Correlates of Partner Dissimilarity Trajectories

Our within-couple approach also provided the opportunity to examine between-couple differences in similarity and its correlates. To begin with, older couples exhibited higher levels of dissimilarity in life satisfaction and an accelerated increase therein. This was contrary to our idea that older partners might be more similar due to more time spent with each other, but could be due to older couples generally being less likely to break up (e.g., Brown & Lin, 2012). One might speculate that there may be instances where older couples are more likely to stay together than younger couples, e.g. when more traditional views about marriage, or a shrinking marriage market, hold them back where younger couples might have more readily filed for divorce, when changing the life partner may seem more feasible and common.

Disability was associated with both higher and, if husbands were disabled, also increasing levels of dissimilarity, which is understandable when viewing a health condition as something that mainly the individual has to cope with and that might keep him or her from engaging in activities formerly done together. That wives' disability was associated with minimally greater dissimilarity than was husbands' disability might allude to observations that wives are often more engaged in the caregiving for their partner than are husbands (Pinquart & Sörensen, 2006) and thus share more of their partner's burden than husbands do. More fine-grained studies are needed to establish whether increasing dissimilarity follows from the maintenance of life satisfaction in the non-disabled partner, from losses of life satisfaction in the disabled partner, or whether both mechanisms are operating at the same time. A thorough test of these scenarios requires frequent assessment of both partners before, during the time of, and after transitions into disability.

Compromised life satisfaction also was associated with larger partner dissimilarity, which is in line with Guven et al. (2012). Stated differently, higher life satisfaction of the partners related to fewer differences between the partners. This may be explained with the finding that content people often are more extraverted (Myers & Diener, 1995), by showing and sharing more of their emotions this may lead to greater contagion. Also, positive emotions are said to allow for building up relationship resources (Fredrickson & Branigan, 2005), which in turn may facilitate an emotional climate in which the partner thrives, too. Higher levels of life satisfaction were not only associated with lower levels, but also accelerated increase in dissimilarity. This may again be attributable to extremely high levels of life satisfaction regressing to the mean.

A longer relationship increased similarity, which speaks both for the idea of couples emotionally converging over time as well as its benefits (cf. Anderson et al., 2003): selective survival of relationships likely makes up a major part of this effect, given the greater

likelihood of similar couples staying together (Guven et al., 2012). Contrary to our hypotheses, having children was associated with higher levels of dissimilarity. We expected that caring for the same person's well-being would yield greater similarity. However, childless couples might simply exert more influence on each other, by being the most important person for each other and probably spending more time with the partner. Also, having children might lead the couple to divide labor in the sense of one partner going to work and the other staying at home to take care of the children, the result being that the partners live in more different contexts than before, when typically both partners went to work.

Partner dissimilarity was more pronounced when husbands reported higher life satisfaction than their wives. Put differently, a husband with lower life satisfaction than his wife is likely to have a wife more similar to him in life satisfaction than a husband who reports higher life satisfaction than his wife. One post-hoc interpretation is that husbands with a relatively lower life satisfaction are more likely to shape the couple's emotional climate strongest, which is in line with research showing that husbands (or partners with higher power) have indeed been found to influence their wives' emotions more than vice versa (cf. Larson & Almeida, 1999) and that negative emotions are often more contagious than positive ones (cf. Larson & Almeida; Saxbe & Repetti, 2010).

We also found that including satisfaction with family life only minimally changed the substantive pattern of findings. This is an important finding because it illustrates that dissimilarity in life satisfaction and its development are not merely a proxy for relationship functioning, but a factor of its own – which is connected to relationship functioning in a meaningful way, as illustrated by the finding that feeling more or less satisfied with family life had a significant association with the level and subsequent development of dissimilarity in life satisfaction. This link between dissimilarity and relationship functioning is

corroborated further by the comparison of couples staying together versus separating: couples to separate later exhibit greater and more steeply increasing dissimilarity in life satisfaction. This is particularly interesting in light of overall increasing levels of dissimilarity. Indeed, divorce rates are on the rise in Germany (Wagner, Schmid, & Weiß, 2015), and "having little in common" and unresolved disagreements are among the most frequent reasons for divorce (Amato & Previti, 2003).

Implications of Partner Dissimilarity Trajectories

Our analyses from the SOEP couple participants revealed that both greater levels and increasing development of partner dissimilarity were each associated with compromised satisfaction with one's family life. Relating differences in dissimilarity level to satisfaction with family life allowed us to go beyond mere speculation of similarity or complementarity benefits. Our results extend earlier reports on associations of dissimilarity with other indicators of relationship functioning, namely relationship stability: Guven et al. (2012) demonstrated among young and middle-aged couples that greater and increasing discrepancy in partners' life satisfaction predicted separation. Gerstorf and colleagues (2013) also found that larger discrepancies in mental health were predictive of elevated risks for dissolution of the partnership in the Australian HILDA sample. While one could argue that relationship stability as considered above need not be adaptive by itself – e.g., when staying in a dysfunctional relationship –feeling satisfied with family life can confidently be considered a good indicator of relationship quality, and is likely less biased than relationship stability by background variables such as religiosity or economic constraints that often prevent people from filing for divorce despite poor relationship functioning. Our results of greater satisfaction with family life found at a lower level of dissimilarity in life satisfaction and a less steep increase therein are consistent with theorizing that emphasizes the benefits of similarity and growing more similar (e.g., Gottman et al., 1998). In our investigation, the

level and slope of life satisfaction dissimilarity represents a unique risk for satisfaction with family life above and beyond all individual and relationship correlates included. This finding is important because it shows that dissimilarity itself can matter for relationship outcomes and is not merely a side-effect of developments in other variables.

While individual and couple characteristics influencing satisfaction with family life above and beyond dissimilarity were not part of our hypotheses, it is an interesting finding that husbands' satisfaction with family life seems to be more susceptible to influences of partner and couple characteristics: for instance, while wives' satisfaction with family life was influenced only by their own life satisfaction, husbands' satisfaction with family life was also influenced by how satisfied their wives were with life. In the light of recent evidence that men's life satisfaction is more impacted by their partners' marital satisfaction than vice versa (Carr, Freedman, Cornman, & Schwarz, 2014), this might call for more research investigating gender differences in partner influences, especially given earlier conflicting findings in which husbands influenced their partner's stress and emotions more than vice versa (cf. Larson & Almeida, 1999).

Limitations and Outlook

We note several limitations of our study. First, the SOEP lacks information on relationship satisfaction and relationship quality, both of which represent highly informative and straightforward indicators of relationship functioning. We had tried to approximate these by using satisfaction with family life. However, relationship quality likely would be less influenced by other variables such as the relationship to and demands of children and parents. Another central limitation of our measures is that the psychometric properties of single-item measures are lower than those based on comprehensive measures derived from multiple items and scales – our measure of life satisfaction may not have been sensitive enough to monitor subtle changes in the phenomenon of interest and thereby limit the range of variation to be

examined (see Gerstorf et al., 2014). Unfortunately, multi-item assessments are often not feasible in national panel studies, but several overviews have shown converging evidence between studies that have used single-item and multi-item assessments of well-being (Cheung & Lucas, 2014; Diener, Inglehart, & Tay, 2012).

We also note that the annual assessments in the SOEP allow for a thorough characterization of long-term trajectories of stability and change. However, such a design is not well suited to disentangle mechanisms underlying associations between partners (e.g., such as joint coping, emotion contagion, or pleasant interactions). Supplementing the current design with more mechanism-oriented inquiry such as experience sampling protocols may help shed light on some of the processes underlying partner (dis)similarities (see Gerstorf, Hoppmann, & Ram, 2014).

A limitation of the sample is that data on the partner is only available from the moment he or she moves into the household, thereby only including people who have been partnered or married before entering the study. That is, our baseline measure of partner dissimilarity is not a real baseline, but partner associations have often already set in. A particularly important extension for future research would be to investigate similarity dynamics in same-sex couples, which was not possible because only a small number of couples self-identified as such in the SOEP. Having to restrict our conclusions to heterosexual couples is a limitation that is all too often present in couple research and should be met with appropriate sampling techniques (see Meyer & Wilson, 2009).

Conclusions

The current study has pursued an alternative approach to study questions revolving around the nature, correlates, and consequences of partner similarity. Rather than considering intercorrelations between partners, we make use of a within-partner index that quantifies the absolute size of the difference between partners' reports of life satisfaction. We found that

partners considerably differ from one another in reports of life satisfaction and that this difference increases over 31 years that partners live together, after an initial minimal decrease. We have identified key individual and relationship correlates associated with couple differences in the size of and changes in partner dissimilarity. We have also shown that between-partner differences in the size of and change in within-partner dissimilarity hold highly valuable information and are predictive of a central relationship outcome, namely satisfaction with family life. More mechanism-oriented research is needed to better understand the underlying pathways.

Words: 7,425

References

Amato, P. R., & Hohmann-Marriott, B. (2007). A comparison of high-and low-distress marriages that end in divorce. *Journal of Marriage and Family*, *69*(3), 621-638. doi: 10.1111/j.1741-3737.2007.00396.x

Amato, P. R., & Previti, D. (2003). People's reasons for divorcing gender, social class, the life course, and adjustment. *Journal of Family Issues, 24*, 602-626. doi: 10.1177/0192513X03254507

Anderson, C., Keltner, D., & John, O. P. (2003). Emotional convergence between people over time. *Journal of Personality and Social Psychology*, *84*, 1054. doi: 10.1037/0022-3514.84.5.1054

Antonucci, T. C. (2001). Social relations: An examination of social networks, social support, and sense of control. In J. E. Birren & K. W. Schaie, K. W. (Eds.), *Handbook of the psychology of aging* (Vol. 5, p. 427-476). London: Academic Press.

Baird, B. M., Lucas, R. E., & Donnellan, M. B. (2010). Life satisfaction across the lifespan: Findings from two nationally representative panel studies. *Social Indicators Research*, *99*(2), 183-203. doi: 10.1007/s11205-010-9584-9

Baltes, P. B. (1987). Theoretical propositions of life-span developmental psychology: On the dynamics between growth and decline. *Developmental Psychology, 23,* 611–626. doi:10.1037/0012-1649.23.5.611

Baltes, M. M., & Carstensen, L. L. (1999). Social psychological theories and their applications to aging: From individual to collective social psychology. In V. L. Bengtson & K. W. Schaie (Eds.), *Handbook of theories of aging* (pp. 209–226). New York: Springer.

Baltes, P. B., & Staudinger, U. M. (Eds.). (1996). *Interactive minds: Life-span perspectives*

on the social foundation of cognition. New York, NY: Cambridge University Press.

Berg, C. A., & Upchurch, R. (2007). A developmental-contextual model of couples coping with chronic illness across the adult life span. *Psychological bulletin, 133,* 920 - 954. http://dx.doi.org/10.1037/0033-2909.133.6.920

Bookwala, J., & Schulz, R. (1996). Spousal similarity in subjective wellbeing: The cardiovascular health study. *Psychology and Aging*, *11*, 582–590. doi: 10.1037/0882-7974.11.4.582

Botwin, M. D., Buss, D. M., & Shackelford, T. K. (1997). Personality and mate preferences: Five factors in mate selection and marital satisfaction. *Journal of Personality, 65,* 107–136. doi: 10.1111/j.1467-6494.1997.tb00531.x

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by design and nature*. Cambridge, MA: Harvard University Press.

Brown, S. L., & Lin, I. F. (2012). The gray divorce revolution: Rising divorce among middle-aged and older adults, 1990–2010. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *67*, 731-741. doi: 10.1093/geronb/gbs089

Carr, D., Freedman, V. A., Cornman, J. C., & Schwarz, N. (2014). Happy Marriage, Happy Life? Marital Quality and Subjective Well-being in Later Life. *Journal of Marriage and Family, 76*, 930-948. doi: 10.1111/jomf.12133

Carstensen, L. (1992). Social and emotional patterns in adulthood: Support for socioemotional selectivity theory. *Psychology and Aging, 7,* 331-338. doi: 10.1037/0882-7974.7.3.331

Carstensen, L., Gottman, J. M., & Levenson, R. W. (1995). Emotional behavior in long-term marriage. *Psychology and aging, 10,* 140-149. doi: 10.1037/0882-7974.10.1.140

Cheung, F., & Lucas, R. E. (2014). Assessing the validity of single-item life satisfaction measures: results from three large samples. *Quality of Life Research*, 1-10. 10.1007/s11136-014-0726-4

Desai, S., Schimmack, U., Jidkova, S., & Bracke, P. (2012). Spousal similarity in depression: A dyadic latent panel analysis of the panel study of Belgian households. *Journal of abnormal psychology*, *121*, 309-314. doi: 10.1037/a0025575

Diener, E., Inglehart, R., & Tay, L. (2012). Theory and validity of life satisfaction scales. *Social Indicators Research*, *112,* 497-527. doi: 10.1007/s11205-012-0076-y

Diener, E., Lucas, R. E., & Scollon, C. N. (2006). Beyond the hedonic treadmill: Revising the adaptation theory of well-being. *American Psychologist*, *61*, 305-314. doi:10.1037/0003-066X.61.4.305

Diener, E., & Seligman, M. E. (2002). Very happy people. *Psychological science*, *13*, 81-84. doi: 10.1111/1467-9280.00415

Dixon, R. A. (1999). Exploring cognition in interactive situations: The aging of N+1 minds. In T. M. Hess & F. Blanchard-Fields (Eds.), *Social cognition and aging* (pp. 267-290). San Diego, CA: Academic Press.

Fong, J. H., Sherris, M., & Yap, J. (2015). Forecasting disability: application of a frailty model. *Scandinavian Actuarial Journal,* 1-23. doi: 10.1080/03461238.2015.1092168

Fredrickson, B. L., & Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition & Emotion, 19*, 313–332. doi:10.1080/02699930441000238

Gerstorf, D., Heckhausen, J., Ram, N., Infurna, F. J., Schupp, J., & Wagner, G. G. (2014). Perceived personal control buffers terminal decline in well-being. *Psychology and Aging*, *29*, 612-625. doi: 10.1037/a0037227

Gerstorf, D., Hoppmann, C. A., & Ram, N. (2014). The promise and challenges of integrating multiple time-scales in adult developmental inquiry. *Research in Human Development*, *11*, 75-90. doi: 10.1080/15427609.2014.906725

Gerstorf, D., Windsor, T. D., Hoppmann, C. A., & Butterworth, P. (2013). Longitudinal change in spousal similarities in mental health: Between-couple and within-couple perspectives. *Psychology and Aging*, *28*, 540. doi: 10.1037/a0032902

Gonzaga, G. C., Campos, B., & Bradbury, T. (2007). Similarity, convergence, and relationship satisfaction in dating and married couples. *Journal of Personality and Social Psychology*, *93*, 34. doi: 10.1037/0022-3514.93.1.34

Gottman, J. M., Coan, J., Carrere, S., & Swanson, C. (1998). Predicting marital happiness and stability from newlywed interactions. *Journal of Marriage and the Family, 60,* 5-22. Retrieved from: http://www.jstor.org/stable/353438

Guven, C., Senik, C., & Stichnoth, H. (2012). You can't be happier than your wife. Happiness gaps and divorce. *Journal of Economic Behavior and Organization*, *82*, 110-130. doi: 10.1016/j.jebo.2012.01.003

Haisken-DeNew, J., & Frick, J. R. (2005). DTC Desktop Companion to the German Socio-Economic Panel (SOEP). Berlin: German Institute for Economic Research (DIW). Retrieved from www.diw.de/documents/dokumentenarchiv/17/diw_01.c.38951.de/dtc.409713.pdf

Havens, E. M. (1973). Women, work, and wedlock: A note on female marital patterns in the United States. *American Journal of Sociology,* 975-981.

Hawkins, A. J., Willoughby, B. J., & Doherty, W. J. (2012). Reasons for divorce and openness to marital reconciliation. Journal of Divorce & Remarriage, 53(6), 453-463. doi: 10.1080/10502556.2012.682898

Headey, B., Muffels, R., & Wagner, G. G. (2010). *Long-running German panel survey shows that personal and economic choices, not just genes, matter for happiness*. Proceedings of the National Academy of Sciences, 107(42), 17922-17926. doi: 10.1073/pnas.1008612107

Hoppmann, C., Gerstorf, D., Willis, S., & Schaie, K. W. (2011). Spousal interrelations in happiness in the Seattle Longitudinal Study. *Developmental Psychology, 47*, 1-8. doi: 10.1037/a0020788.

Humbad, M. N., Donnellan, M. B., Iacono, W. G., McGue, M., & Burt, S. A. (2010). Is spousal similarity for personality a matter of convergence or selection? *Personality and Individual Differences*, *49*, 827-830. doi: 10.1016/j.paid.2010.07.010

Humbad, M. N., Donnellan, M. B., Iacono, W. G., McGue, M., & Burt, S. A. (2013). Quantifying the association between personality similarity and marital adjustment using profile correlations: A cautionary tale. *Journal of Research in Personality, 47*, 97–106. doi: 10.1016/j.jrp.2012.09.007

Infurna, F. J., Gerstorf, D., Ram, N., Schupp, J., & Wagner, G. G. (2011). Long-term antecedents and outcomes of perceived control. *Psychology and aging, 26,* 559 -575. doi: http://dx.doi.org/10.1037/a0022890

Kelley, H. H., & Thibaut, J. W. (1978). *Interpersonal relations: A theory of interdependence* (p. 341). New York: Wiley.

Kenny, D. A., Kashy, D. A., & Cook, W. L. (2006). *Dyadic data analysis*. New York, NY: Guilford.

Kalmijn, M., & Poortman, A. R. (2006). His or her divorce? The gendered nature of divorce and its determinants. *European sociological review, 22,* 201-214.

Kroh, M. (2006). *An Experimental Evaluation of Popular Well-Being Measures*. DIW Discussion Papers No. 546. Berlin. Retrieved from http://www.diw.de/documents/publikationen/73/43968/dp546.pdf

Kroh, M. (2014). Documentation of Sample Sizes and Panel Attrition in the German Socio-Economic Panel (SOEP) (1984 until 2012). SOEP Survey Papers 177: Series D. Berlin: DIW/SOEP. Retrieved from http://panel.gsoep.de/soep-docs/surveypapers/diw_ssp0177.pdf

Lang, F. R. (2001). Regulation of social relationships in later adulthood. *Journal of Gerontology: Psychological Sciences, 56B*, P321-P326. doi: 10.1093/geronb/56.6.P321

Larson, R. W., & Almeida, D. M. (1999). Emotional transmission in the daily lives of families: A new paradigm for studying family process. *Journal of Marriage and the Family, 61*, 5-20.

Larson, R. W., & Richards, M. H. (1994). Family emotions: Do young adolescents and their parents experience the same states?. *Journal of Research on Adolescence*, *4*, 567-583. doi: 10.1207/s15327795jra0404_8

Littell, R. C., Miliken, G. A., Stoup, W. W., Wolfinger, R. D. , & Schabinger, O. (2006). *SAS for mixed models, second edition*. Cary, NC: SAS Institute. Retrieved from http://ebooks.cawok.pro/SAS.Publishing.SAS.for.Mixed.Models.2nd.Edition.Mar.2006.pdf

Little, R. J. A., & Rubin, D. B. (1987). *Statistical analysis with missing data*. New York, NY: Wiley.

Lounsbury, J. W., Sundstrom, E., Loveland, J. M., & Gibson, L. W. (2003). Intelligence,"Big Five" personality traits, and work drive as predictors of course grade. *Personality and Individual Differences, 35*, 1231-1239. doi: 10.1016/S0191-8869(02)00330-6

Lucas, R. E. (2007). Long-term disability is associated with lasting changes in subjective well-being: Evidence from two nationally representative longitudinal studies. *Journal of Personality and Social Psychology*, *92*, 717–730. doi:10.1037/0022-3514.92.4.717

Lucas, R. E., & Donnellan, M. B. (2012). Estimating the reliability of single-item life satisfaction measures: Results from four national panel studies. *Social Indicators Research*, *105*, 323-331. doi: 10.1007/s11205-011-9783-z

Luo, S., & Klohnen, E. C. (2005). Assortative mating and marital quality in newlyweds: a couple-centered approach. *Journal of Personality and Social Psychology*, *88*, 304. doi: 10.1037/0022-3514.88.2.304

Luong, G., Charles, S. T., & Fingerman, K. L. (2010). Better with age: Social relationships across adulthood. *Journal of Social and Personal Relationships*. doi: 10.1177/0265407510391362

McArdle, J. J. (1988). Dynamic but structural equation modelling of repeated measures data. In J. R. Nesselroade & R. B. Cattell (Eds.), *Handbook of multivariate experimental psychology* (Vol. 2, pp. 561-614). New York, NY: Plenum.

McArdle, J. J. (1994). Structural factor analysis experiments with incomplete data. *Multivariate Behavioral Research, 29,* 409-454. doi: 10.1207/s15327906mbr2904_5

Meegan, S. P., & Berg, C. A. (2002). Contexts, functions, forms, and processes of collaborative everyday problem solving in older adulthood. *International Journal of Behavioral Development*, *26*, 6-15. doi: 10.1080/01650250143000283

Meyer, I. H., & Wilson, P. A. (2009). Sampling lesbian, gay, and bisexual populations. *Journal of Counseling Psychology, 56,* 23-31. doi: 10.1037/a0014587

Michalowski, V. I., Hoppmann, C. A., & Gerstorf, D. (2014). Associations between perceived support in older adult marriages and dyadic covariations in momentary

affect and aches. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, gbu151. doi: 10.1093/geronb/gbu151

Myers, D. G., & Diener, E. (1995). Who is happy?. *Psychological science, 6,* 10-19. doi: 10.1111/j.1467-9280.1995.tb00298.x

Peek, M., Stimpson, J., Townsend, A., & Markides, K. (2006). Well-being in older Mexican American spouses. *The Gerontologist*, *46*, 258–265. doi: 10.1093/geront/46.2.258

Pinquart, M., & Sörensen, S. (2006). Gender differences in caregiver stressors, social resources, and health: An updated meta-analysis. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 61,* 33-45. doi:10.1093/geronb/61.1.p33

Rammstedt, B., Spinath, F., Richter, D., & Schupp, J. (2013): Partnership longevity and personality congruence in couples. *Personality and Individual Differences, 54*, 832–835. doi: 10.1016/j.paid.2012.12.007

Rusbult, C. E. (1983). A longitudinal test of the investment model: The development (and deterioration) of satisfaction and commitment in heterosexual involvements. *Journal of Personality and Social Psychology, 45,* 101-117. doi: 10.1037/0022-3514.45.1.101

Saxbe, D., & Repetti, R. L. (2010). For better or worse? Coregulation of couples' cortisol levels and mood states. *Journal of personality and social psychology, 98,* 92-103. doi: 10.1037/a0016959

Schimmack, U., & Lucas, R. E. (2010). Environmental influences on well-being: A dyadic latent panel analysis of spousal similarity. *Social Indicators Research*, *98*, 1-21. doi: 10.1007/s11205-009-9516-8

Stutzer, A., & Frey, B. S. (2006). Does marriage make people happy, or do happy people get married?. *The Journal of Socio-Economics, 35*, 326-347. doi: 10.1016/j.socec.2005.11.043

Tambs, K., & Moum, T. (1992). No large convergence during marriage for health, lifestyle, and personality in a large sample of Norwegian spouses. *Journal of Marriage and the Family*, *54*, 957-971.

Tiedens, L. Z., & Fragale, A. R. (2003). Power moves: complementarity in dominant and submissive nonverbal behavior. *Journal of Personality and Social Psychology*, *84*, 558. doi: 10.1037/0022-3514.84.3.558

Vandenberg, S. G. (1972). Assortative mating, or who marries whom? *Behavior Genetics*, *2*, 127-157. doi:10.1007/BF01065686

Vohs, K. D., Finkenauer, C., & Baumeister, R. F. (2011). The sum of friends' and lovers' self-control scores predicts relationship quality. *Social Psychological and Personality Science*, *2*, 138-145. doi: 10.1177/1948550610385710

Wagner, M., Schmid, L., & Weiß, B. (2015). Exploring Increasing Divorce Rates in West Germany: Can We Explain the Iron Law of Increasing Marriage Instability?.*European Sociological Review, 31,* 211-229. doi: 10.1093/esr/jcv014

Ware, J. E., Gandek, B., & the IQOLA Project Group. (1994). The SF-36 Health Survey: Development and Use in Mental Health Research and the IQOLA project. *International Journal of Mental Health, 23,* 49–73. doi: 10.1080/00207411.1994.11449283

Watson, D., Klohnen, E. C., Casillas, A., Nus Simms, E., Haig, J., & Berry, D. S. (2004). Match makers and deal breakers: Analyses of assortative mating in newlywed couples. *Journal of Personality, 72,* 1029–1068. doi: 10.1111/j.0022-3506.2004.00289.x

Wilson, G., & Cousins, J. (2003). Partner similarity and relationship satisfaction: Development of a compatibility quotient. *Sexual and Relationship Therapy*, *18*, 161-170. doi: 10.1080/1468199031000099424

Windsor, T. D., Ryan, L. H., & Smith, J. (2009). Individual Well-being in Middle and Older Adulthood: Do Spousal Beliefs Matter? *Journals of Gerontology Series B: Psychological Sciences, 64B*, 586-596. doi: 10.1093/geronb/gbp058

Author Notes

Hannah M. Schade, Institute for Psychology at the Humboldt University, Berlin, Germany. Gizem Hülür, Institute for Psychology at the Humboldt University, Berlin, Germany. Frank J. Infurna, Department of Psychology at Arizona State University, Tempe, AZ, USA. Christiane Hoppmann, Department of Psychology at the University of British Columbia, Vancouver, B.C., Canada. Denis Gerstorf, Institute for Psychology at the Humboldt University, Berlin, Germany and German Institute for Economic Research, Berlin, Germany.

e-mail: hannah.schade@hu-berlin.de; gizem.hueluer@hu-berlin.de; finfurna@asu.edu; choppmann@psych.ubc.ca; and denis.gerstorf@hu-berlin.de.

Christiane Hoppmann gratefully acknowledges the support of the Michael Smith Foundation for Health Research (MSFHR) and the Canada Research Chairs program.

Table 1
Growth Model over Time in Study for Within-Couple Dissimilarity in Life Satisfaction: The Role of Partner and Individual Resources.

	Model 1		Model 2	
Parameter	Estimate	SE	Estimate	SE
Fixed Effects				
Intercept	6.42*	0.05	6.01*	0.07
Linear change	0.49*	0.06	0.43*	0.07
Quadratic change	0.29*	0.04	0.29*	0.04
Couple age			0.03*	0.01
Disability wives			0.02*	0.00
Disability husbands			0.01*	0.00
Education wives			0.01	0.03
Education husbands			-0.01	0.02
Life satisfaction wives			-0.12*	0.03
Life satisfaction husbands			-0.12*	0.03
Length of relationship			-0.03*	0.01
Having children			0.46*	0.14
Husband higher life sat.			0.17*	0.03
Couple age x change			0.02*	0.01
Disability wives x change			0.00	0.00
Disability husbands x change			0.00*	0.00
Education wives x change			0.05	0.02
Education husbands x change			-0.00	0.02
Life satisfaction wives x change			0.14*	0.03
Life satisfaction husbands x change			0.21*	0.03
Length of relationship x change			-0.00	0.01
Having children x change			0.27	0.11
Husband higher life sat. x change			-0.06	0.03
Random effects				
Variance of intercept	13.04*	0.36	12.42*	0.35
Variance of linear change	3.31*	0.25	3.71*	0.28
Variance of quadratic change	3.29*	0.24	3.23*	0.24
Covariance intercept, linear change	0.63	0.25	0.40	0.25
Covariance intercept, quad. change	-3.48*	0.22	-3.76*	0.22
Covariance linear change, quad. change	0.85*	0.21	1.18*	0.22
Residual variance	35.26*	0.14	35.23*	0.14
χ^2 *(df)*	17,259.9 (6)		15,027.2 (6)	
AIC	969,914.3		968,168.3	
-2 Log Likelihood	969,894.3		968,108.3	

Note. N = 13,714 couples. Model 1 describes the zero-order model, Model 2 presents estimates including correlates. Partner similarities derived from scores standardized separately for wives and husbands to a T metric using the means across all waves of all women and men in the sample as reference. Time in study centered around 15 and expressed in decades. *AIC* = Akaike Information Criterion, model fit statistic. * p<.01.

Table 2

Growth Model for Within-Couple Dissimilarity in Life Satisfaction For Couples Staying Together vs. Separating.

Parameter	Estimate	SE
Fixed effects		
Intercept	6.14*	0.08
Linear change	0.43*	0.07
Quadratic change	0.35*	0.08
Separation	1.93*	0.29
Separation * Linear Change	1.35*	0.4
Separation * Quadratic Change	0.82*	0.25
Random effects		
Variance of intercept	12.82*	0.46
Variance of linear change	2.75*	0.24
Variance of quadratic change	2.23*	0.22
Covariance intercept, linear change	1.21*	0.27
Covariance intercept, quadratic change	-2.77*	0.25
Covariance linear change, quadratic change	0.36	0.17
Residual variance	32.69*	0.2
χ^2 *(df)*	9264.4 (6)	
AIC	413,359.5	
-2 Log Likelihood	413,333.5	

Note. N = 3,966 couples (2,899 staying together vs. 1,067 reporting a separation). Partner similarities derived from scores standardized separately for wives and husbands to a T metric using the means across all waves of all women and men in the sample as reference. Time in study centered around 15.
AIC = Akaike Information Criterion, model fit statistic.
* $p < .01$.

Table 3

Growth Model for Within-Couple Dissimilarity in Life Satisfaction from 2006-2014, Model 2 Controlling for Satisfaction with Family Life in 2006.

	Model 1		Model 2	
Parameter	Estimate	SE	Estimate	SE
Fixed effects				
Intercept	6.42*	0.07	6.44*	0.07
Linear change	0.1*	0.02	0.1*	0.02
Quadratic change	0.00	0.01	0.00	0.01
Family satisfaction wives			-0.37*	0.04
Family satisfaction husbands			-0.16*	0.04
Couple age	0.03*	0.01	0.03*	0.01
Disability wives	0.02*	0.00	0.02*	0.00
Disability husbands	0.02*	0.00	0.01*	0.00
Education wives	-0.06	0.03	-0.06	0.03
Education husbands	-0.04	0.02	-0.04	0.02
Length of relationship	-0.03*	0.01	-0.03*	0.01
Having children	0.47*	0.15	0.35	0.15
Husband higher life sat.	0.21*	0.04	0.19*	0.04
Family sat. husbands * change			-0.01	0.01
Family sat. wives * change			0.01	0.01
Couple age * change	0.01	0.00	0.00	0.00
Disab. wives * change	-0.00	0.00	-0.00	0.00
Disab husbands * change	0.00	0.00	0.00	0.00
Educ. wives * change	-0.02	0.01	-0.02	-0.02
Educ. husbands * change	0.03	0.01	0.00	0.01
Length of relationship * change	-0.00	0.00	-0.00	0.00
Having children * change	0.11*	0.04	0.11*	0.03
Husband higher * change	0.00	0.02	0.00	0.02
Random effects				
Variance of intercept	13.36*	0.47	12.78*	0.46
Variance of linear change	0.23*	0.02	0.23*	0.02
Variance of quadratic change	0.02*	0.00	0.02*	0.00
Covariance intercept, linear change	0.23*	0.07	0.23*	0.07
Covariance intercept, quadratic change	-0.22*	0.03	-0.22*	0.03
Covariance linear change, quad. change	0.01	0.01	0.01	0.01
Residual variance	31.08*	0.28	31.08*	0.28
χ^2 *(df)*	4,791.25 (6)		4,496.9 (6)	
AIC	264,202.9		263,975.1	
-2 Log Likelihood	264,150.9		263,915.1	

Note. N = 6,588 couples providing data from 2006 on. Time in study centered around 4. Partner similarities derived from scores standardized separately for wives and husbands to a T metric using the means across all waves of all women and men in the sample as reference. Individual levels with life satisfaction were not included due to problems with model convergence given collinearity between life satisfaction and family satisfaction. *AIC* = Akaike Information Criterion, model fit statistic.
* $p < .01$.

Table 4
Predicting Satisfaction with Family Life in 2014 from Partner Dissimilarities in Life Satisfaction as well as Individual and Relationship Correlates.

Variable	Wives	Husbands
Dissimilarity level	– 1.27*	– 0.93*
Dissimilarity slope	– 1.25*	– 0.57*
Couple age	0.03	– 0.00
Disability wives	– 0.01	– 0.03*
Disability husbands	– 0.01	– 0.01*
Education wives	0.03	- 0.06
Education husbands	- 0.15	– 0.08
Life satisfaction wives	1.24*	0.63*
Life satisfaction husbands	0.03	0.70*
Length of relationship	0.04	0.07*
Having children	– 0.23	– 1.89*
Husband higher life sat.	0.12	0.39
Total R^2	0.08	0.09
F	21.4	22.15
(df1, df2)	(12, 2,814)	(12, 2,814)

Note. N = 2,826 couples. Satisfaction with family life standardized separately for wives and husbands to a T metric. CI = confidence interval.
* $p < .01$.

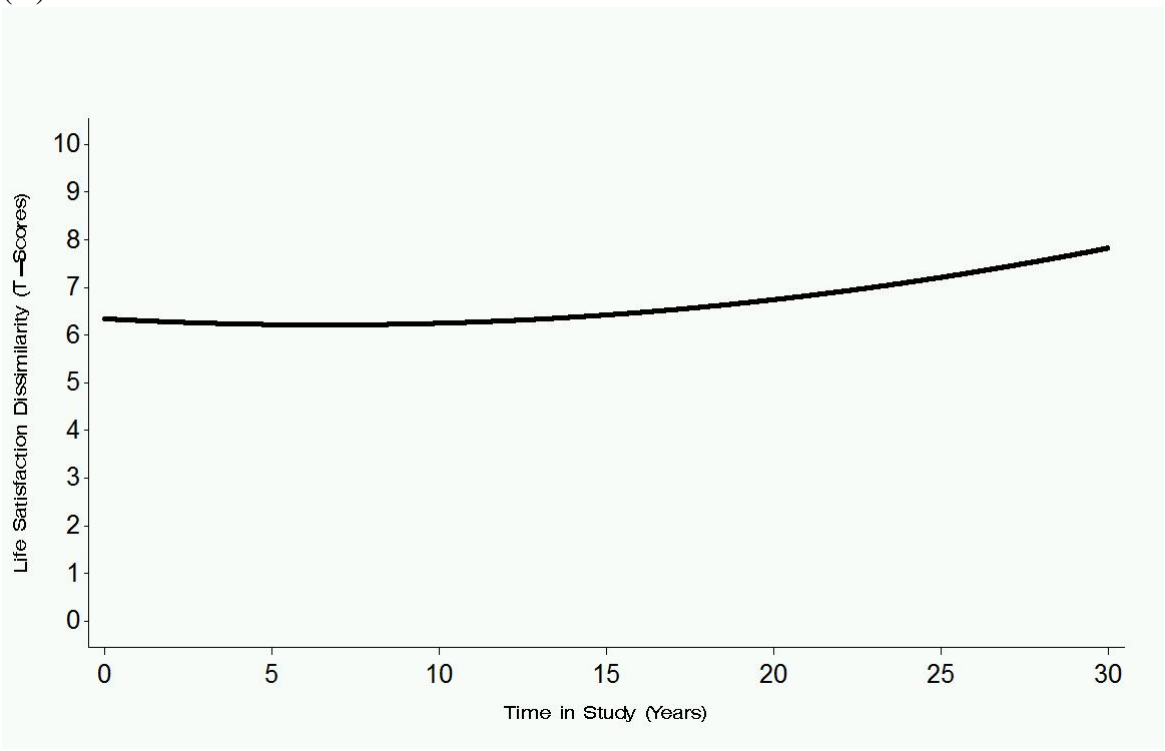
Figure Caption

Figure 1. Panel A illustrates average trajectories of partner dissimilarities in life satisfaction in the Socio-Economic Panel. Within-couple differences were considerable at baseline (0.64 *SD*) and slightly increased (linear rate of change: 0.49 *SD* per decade; quadratic rate of change: 0.29 *SD* per decade) across more than 30 years among partners who remained together over time. Panel B illustrates tremendous between-couple differences in trajectories of partner dissimilarities in life satisfaction, illustrated for a selection of 15 partners over partner age. Data used to calculate partner dissimilarities were standardized to a T metric ($M = 50$, $SD = 10$), separately for wives and husbands.

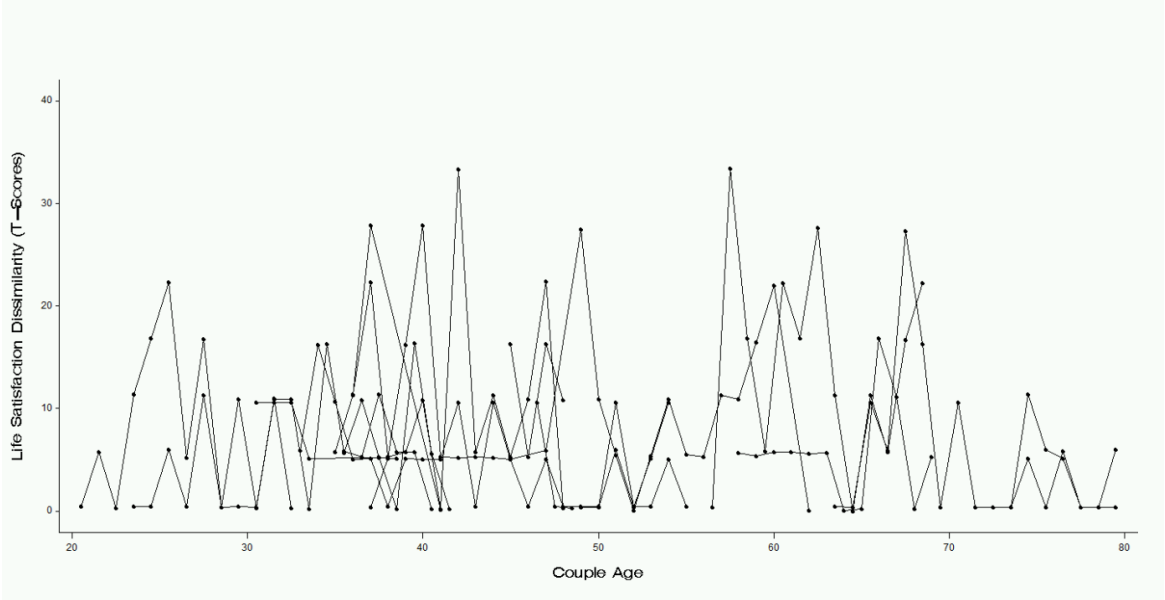
Figure 2. Illustrating trajectories of partner dissimilarity in life satisfaction for couples staying together and couples separating. It can be obtained that partner dissimilarity was of considerable size among couples who stayed together across the observation period. At the same time, partner dissimilarity was exacerbated already at baseline assessment and increased more steeply among couples who separated during the observation period.

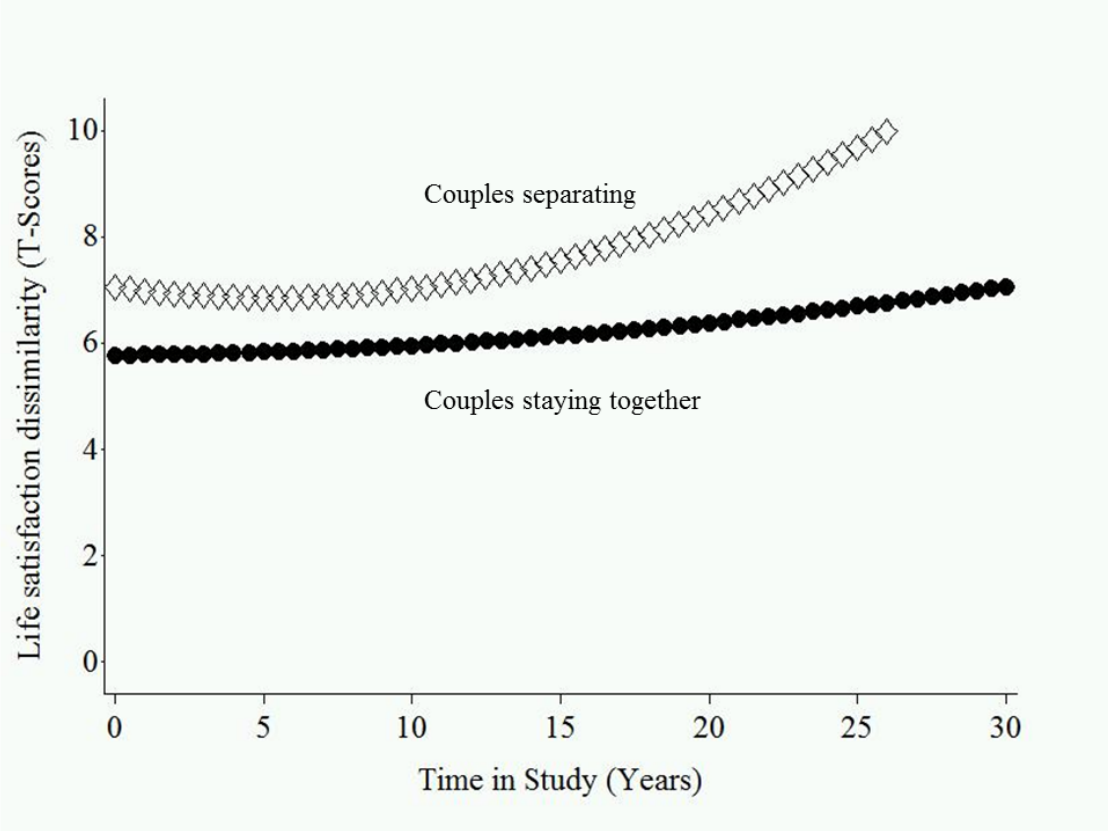
Figure 3. Illustrating the predictive effects of partner dissimilarity in life satisfaction for wives' satisfaction with family life, as obtained in the most recent wave of the sample considered (in 2014, $N = 2{,}826$). Panel A shows that more dissimilarity between partners in life satisfaction predicts lower levels of satisfaction with family life years later. Panel B shows that, independent of level, stronger increases in partner dissimilarity in life satisfaction predict lower satisfaction with family life. Associations for husbands are substantively comparable but weaker.

(A)

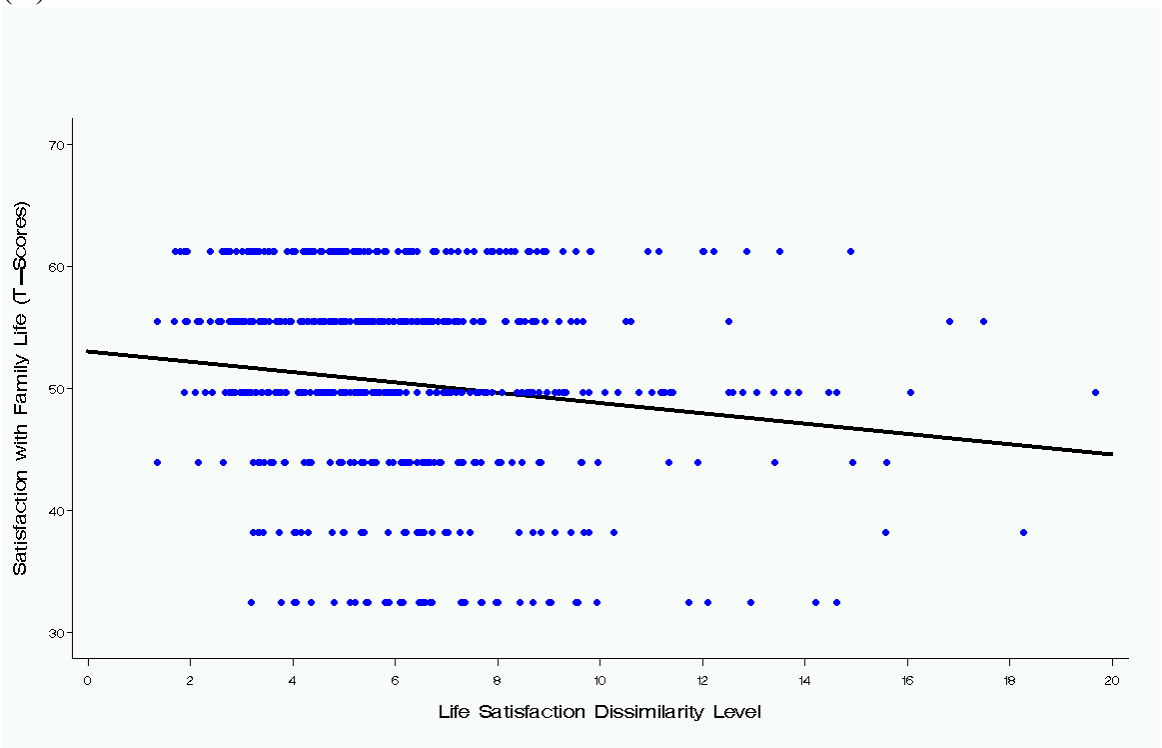

Life Satisfaction Dissimilarity (T-Scores)
10
9
8
7
6
5
4
3
2
1
0
0
5
10
15
20
25
30
Time in Study (Years)

(B)

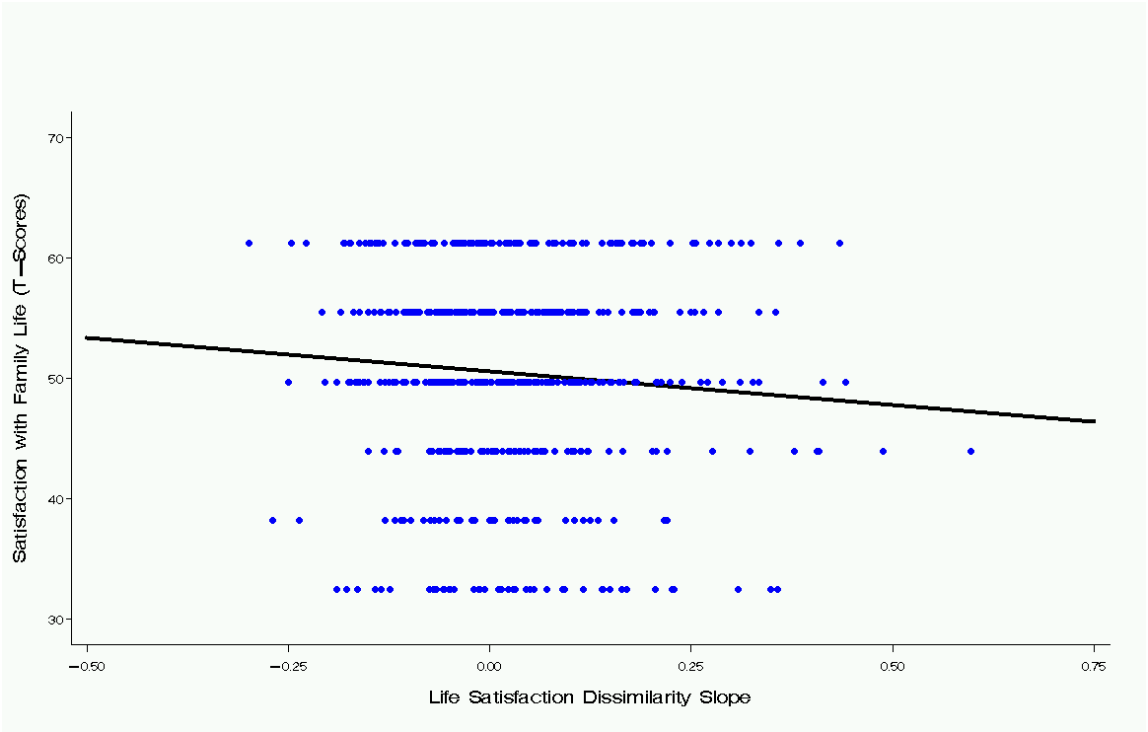

Life Satisfaction Dissimilarity (T-Scores)
40
30
20
10
0
20
30
40
50
60
70
80
Couple Age


Life satisfaction dissimilarity (T-Scores)
10
8
6
4
2
0
Couples separating
Couples staying together
0
5
10
15
20
25
30
Time in Study (Years)

(A)


Satisfaction with Family Life (T-Scores)
70
60
50
40
30
0
2
4
6
8
10
12
14
16
18
20
Life Satisfaction Dissimilarity Level

(B)


Satisfaction with Family Life (T-Scores)
70
60
50
40
30
−0.50
−0.25
0.00
0.25
0.50
0.75
Life Satisfaction Dissimilarity Slope

The more we are in control, the merrier?

Partner Perceived Control and Negative Affect in the Daily Lives of Older Couples

Johanna Drewelies, PhD[1], Hannah Schade, M. Sc.[1], Gizem Hülür, PhD[2],

Christiane A. Hoppmann, PhD[3], Nilam Ram, PhD[4], & Denis Gerstorf, PhD[1,4]

[1]Humboldt University Berlin, Germany

[2]University of Zurich, Switzerland

[3]University of British Columbia, Vancouver, BC, Canada

[4]Pennsylvania State University, University Park, PA

This is a pre-copyedited, author-produced version of an article accepted for publication in The Journals of Gerontology: Series B following peer review. The version of record

Drewelies, J., Schade, H., Hülür, G., Hoppmann, C. A., Ram, N., & Gerstorf, D. (2018). The More We Are in Control, the Merrier? Partner Perceived Control and Negative Affect in the Daily Lives of Older Couples. The Journals of Gerontology: Series B. doi: 10.1093/geronb/gby009

is available online at:

https://academic.oup.com/psychsocgerontology/article/75/2/338/4838962

https://doi.org/10.1093/geronb/gby009.

Address correspondence regarding this manuscript to: Johanna Drewelies, Humboldt University Berlin, Department of Psychology, Unter den Linden 6, 10099 Berlin, Germany; phone: +49-(0)30-2093-9424; fax: +49-(0)30-2093-9351; johanna.drewelies@hu-berlin.de.

Abstract

Objectives: It is well established that daily perceived control is closely associated with lower negative affect among older adults. However, it is an open question whether control perceptions of one's partner are also uniquely associated with one's own negative affect.

Method: To examine such associations in dyads of older long-term partners, we make use of data obtained six times a day over seven consecutive days as participants went about their everyday lives (N = 87 couples; mean age = 75 years; mean relationship length = 46 years). Our multilevel actor-partner models for dyadic data analyses covary for relevant individual and couple differences in socio-demographic characteristics, self-reported physical health, and cognitive functioning.

Results: Corroborating and extending earlier reports, results reveal that higher momentary perceived control was associated with lower negative affect. Most importantly, we found that higher momentary perceived control of the partner is additionally and uniquely associated with lower negative affect of the actor.

Discussion: We discuss possible mechanisms and underlying pathways of how perceived control may help both partners down-regulate their negative emotions in daily life. We close by considering conceptual and practical implications.

Words: 185

Keywords: perceived control, older couples, daily diary, affective well-being

The more we are in control, the merrier?

Partner Perceived Control and Negative Affect in the Daily Lives of Older Couples

Conceptual and empirical work in lifespan research has long documented the relevance of perceived control for key outcomes of successful aging (Kunzmann, Little, Smith, 2002; Lachman, 2006; Skinner, 1996). In the domain of affective well-being, for example, empirical studies have repeatedly shown that older adults who perceive more control over their life circumstances also experience lower negative affect (Neupert, Almeida, & Charles, 2007; Ong, Bergeman, & Bisconti, 2005; Windsor & Anstey, 2010). Little is known, however, about whether and how such associations generalize within a couple to partners' control and well-being, namely if partners' perceptions of control are also uniquely associated with older adults' momentary negative affect. This is important because development does not occur in isolation (Bronfenbrenner, 1986; Larson & Almeida, 1999). Declining resources with advancing age make the affective system increasingly vulnerable (e.g., Charles, 2010) and partner characteristics such as partner perceived control often constitute a resource to draw from (Drewelies, Chopik, Hoppmann, Smith & Gerstorf, 2016; Windsor & Anstey, 2010). Specifically, spouses and long-term partners often constitute one particularly important social context because they typically share a history of idiosyncratic experiences and jointly deal with the same opportunities and challenges, both in daily life and over the longer term (Lang, 2001). In the current report, we thus extend previous research on associations between momentary perceived control and negative affect in older adults to also examine such associations among partners. To do so, we make use of data obtained six times a day over seven consecutive days as older couples went about their everyday lives (N = 87 couples; mean age = 75 years; mean relationship length = 46 years). In doing so, we also examine the role of established individual- and partner-level difference factors, including socio-demographic characteristics, physical health, and cognitive functioning (Hoppmann & Gerstorf, 2016).

The Role of Perceived Control for Negative Affect in Daily Life

Perceived control refers to people's beliefs about their ability to influence and change life circumstances (Skinner, 1996). Several lifespan theoretical frameworks propose that daily perceived control constitutes an important antecedent of adaptation in the affective well-being domains (Baltes & Baltes, 1986; Cohen & Wills, 1985; Kunzmann et al., 2002; Ryan & Deci, 2000; Sheldon et al. 2001; Tighe, Dautovic, & Allen, 2015). For example, social determination theory (Ryan & Deci, 2000; Sheldon et al. 2001) considers perceived control as an enabling factor that promotes effective strategy use, which in turn boosts feelings of competence and facilitates numerous outcomes, including affective well-being (for overview, see Lachman, Neupert, & Agrigoroaei, 2012). In a similar vein, several lifespan scholars have argued that perceived control helps people mobilize social support in the presence of strain, with control thus serving as a stress buffer (Antonucci, 2001; Cohen & Wills, 1985). Previous empirical studies suggest that such associations between perceived control and negative affect operate via direct and indirect pathways (Neupert et al., 2007; Ong et al., 2005; Windsor & Anstey, 2010). For example, individuals who perceive themselves as having more general and momentary control over current life circumstances might make better use of resources to deal with the challenges of everyday life. Although there may be a general link between perceived control and affective well-being, the associations between control and negative affect may be particularly strong. To illustrate, theories of affective well-being propose that while positive affect is more closely tied to behaviors (e.g., actual engagement in social activities), negative affect is more closely tied to self-evaluative indicators, such as perceptions of control (Kunzmann, 2008). As a consequence, when perceived control over one's life is higher negative affect may be lower.

Consistent with these conceptual perspectives (lifespan theory, social determination theory, and theories of affective well-being), numerous empirical studies have documented the importance of perceived control for affective well-being (Bye & Pushkar, 2009; Koffer et

al., 2017; Neupert et al., 2007; Ong et al., 2005; Tighe et al., 2015; Windsor & Anstey, 2010). For example, Hay and Diehl (2010), using data from an adult lifespan sample of 239 adults over 30 days, found that higher daily perceived control was associated with lower negative affect. In a similar vein, Neupert et al. (2007), using data from adults in the National Study of Daily Experiences, found that higher daily perceived control was linked to lower negative affect in response to daily stressors. However, little is known about the associations between perceived control and negative affect that manifest within social systems such as couples.

The Role of Partner Perceived Control for Negative Affect in Daily Life

Romantic relationships are a special social context in older age because long-term partners often live in the same environment, optimize the emotional climate, and typically share significant portions of their adult life span with one another, making it likely that their lives are highly intertwined (Carstensen, Gottman, & Levenson, 1995; Carstensen, Graff, Levenson, & Gottman, 1996; Lang, 2001; Hoppmann & Gerstorf, 2016). Consistent with this proposition, empirical research has repeatedly shown that romantic partners shape each other's affective well-being (Bookwala & Schulz, 1996; Butterworth & Rodgers, 2006; Gerstorf, Windsor, Hoppmann, & Butterworth, 2013; Hoppmann, Gerstorf, Willis, & Schaie, 2011; Larson & Almeida, 1999; Windsor, Ryan, & Smith, 2009). Similarly, behavioral and physiological indicators of stress have been widely studied in the social context of romantic relationships (Helm, Sbarra, & Ferrer, 2012; Liu, Rovine, Cousino Klein, & Almeida, 2013). Key contributing factors are that partners typically experience their daily lives together, that they share goals and work collaboratively on problems, activities that potentially provoke similar feelings of competence and control (Hoppmann & Gerstorf, 2016; Mejía & Gonzales, 2017). For example, when being confronted with a challenging situation, both partners' perceived control might contribute to them (as a couple) approaching the challenge effectively and dealing with it successfully, a couple-level process that may buffer both partners' negative affect. Similarly, in a given moment when one partner perceives higher control, the

partner might show specific behaviors towards his or her spouse (e.g., verbal support, physical intimacy), which in turn might affects the actor's own affective well-being.

Even though previous studies have examined the role of partner perceived control for outcomes such as physical health or health behavior (e.g., Drewelies et al., 2016), empirical studies testing conceptual notions about dynamics between perceived control and affective well-being in dyads are rare. To our knowledge, there is only one such study. Windsor, Ryan, and Smith (2009), using cross-sectional couple data from the Health and Retirement Study, found that individuals' general perceived control (operationalized as mastery beliefs) was associated with both higher individual well-being and higher partner well-being (operationalized as general life-satisfaction, positive and negative affect). As noted, these analyses were based on cross-sectional differences and thus cannot speak to how such associations emerge within couples' everyday lives. However, an increasing body of literature has accumulated to show that associations among variables that exist between individuals might not be equivalent to those found within individuals (Brose et al., 2014; Hamaker, Nesselroade, & Molenaar, 2007; Voelkle, Brose, Schmiedek, & Lindenberger, 2014). As a consequence, findings based on between-person associations might not generalize to the within-person level of analysis (Hoffman & Stawski, 2009). Cross-sectional studies including only one measurement occasion do not allow disentangling those effects from one another. By measuring couples only at one point in time, the between-person differences in these measurements could result from several sources (Nesselroade, 1991). To illustrate, if one partner in a given couple reports vastly different perceived control than the other partner, it may well be that one partner always has a lower perception of control than the other. It is also possible though that the one partner is feeling especially ineffective in that very moment, but typically the partners do not differ from one another. As a consequence, partner differences may either be due to static and chronic differences between them (between-person differences) or to more temporary differences (within-person variability from one moment to

the next). By using daily diary data, we are in a position to disentangle these effects from one another and thus contribute to a more fine-grained picture of associations of perceived control with negative affect in older couples (Eizenman, Nesselroade, Featherman & Rowe, 1997).

We would expect that individuals whose partners perceive more control also report lower negative affect, net of their own perceived control. These dyadic associations also likely vary across couples, individuals, and situations. For example, it is possible that partners with generally high perceived control can partially compensate for the negative affect implications when momentary perceived control is low (i.e., the between-person level). In turn, having a partner whose perceived control is generally low may increase the affective vulnerability of an older adult with low perceived control. In addition, in moments when people themselves perceive lower control than they usually do, they may be particularly tempted to draw from their partner's perceptions of control as a resource and may thus report less negative affect than one might expect based on the person's own perceived control (i.e., the within-person level).

The Present Study

The aim of the present study was to examine within-dyad associations between momentary perceived control and negative affect in older couples. Drawing from and extending previous findings, we expected higher perceived control to be associated with lower negative affect within individuals. That is, in moments when a person felt more control over their lives than usual, we expect that they experience lower negative affect. Over and above such within-person associations, we hypothesized that higher momentary perceived control of the partner is additionally and uniquely associated with lower negative affect of the actor. To test these predictions simultaneously, we applied multilevel modeling to repeated time sampling assessment data collected from both partners of 87 older couples (i.e., 174 individuals) as they went about their everyday lives.

Method

To test our research questions, we used time-sampling data from an experience sampling study of older couples (Brinberg, Ram, Hülür, Brick, & Gerstorf, 2017; Hülür, Hoppmann, Rauers, Schade, Ram, & Gerstorf, 2016). Details relevant to the present study are given below.

Participants

Participants were 87 older heterosexual couples (174 individuals) who had provided a minimum of 36 of 42 possible assessments of relevant study variables. From a total sample of 110 participants, data for 23 participants were excluded because of missing data from one or both partners on any of the study variables. Participants in the analysis sample provided on average 41.3 of 42 possible observations (SD = 0.66, range 36 to 42) and performed higher than participants not included in the analysis on a test of fluid cognitive performance (p = .030), but did not differ on other variables. Participants were between 67 and 93 years old (M = 75.2; SD = 3.77) and were married/in a civil union/in a relationship for 46 years on average (SD = 11.68; range = 7 – 63). About 45% indicated holding a college, university, or postgraduate degree.

Procedure

Participants were recruited via announcements in local Berlin newspapers. At initial telephone contact, participants were screened according to the following criteria: First, participants had to be aged 70 years or older; or, if only one partner was 70 years or older, the younger partner had to be older than 65 years. Second, both partners had to live in the same household. Third, participants had to have sufficient command of the German language. Fourth, participants' corrected vision had to be sufficient to read small newspaper titles and their corrected hearing had to be sufficient to hear the door or phone bell (iPad-based assessments were prompted by an audio signal). Appointments were scheduled on what the participants considered a "typical week" in their lives. On each of the 7 days of the study

week, participants were presented with six brief questionnaires via tablet computer. The first questionnaire was answered immediately after waking up, and the remaining five questionnaires at set times throughout the day (10 AM, 1 PM, 4 PM, 7 PM, and 9.30 PM). These set times could be adjusted by the research assistants on the day prior to the study to fit participant's schedules. The measures included in this study were administered 6 times per day across 7 days (up to 42 measurement occasions in total).

Measures

Momentary negative affect. Participants indicated to what degree they felt various affective states at the moment; answering "*How are you feeling at the current moment: [affect]?*" using a slider scaled from 0 (not at all) to 100 (strongly). Participants' momentary *negative affect* (NA) was calculated for each of the 42 occasions as the average of responses to the items overwhelmed, nervous, jittery, sad, worried, angry, sad, frustrated, and groggy.

Momentary perceived control. Momentary perceived control was indicated by participants' response at each occasion to the item "*How much do you think you can influence what happens in your life right now?*" on a scale from 0 (not at all) to 100 (very) using a slider. To simultaneously examine both within-person and between-person associations, we split self-reported perceived control scores into "trait" (between-person) and "state" (within-person) components (Bolger & Laurenceau, 2013). The between-person components (*actor perceived control* BP_i and *partner perceived control* BP_i) were defined as the person-specific average of repeated measures, and the within-person components (*actor perceived control* WP_{ti} and *partner perceived control* WP_{ti}) were defined as occasion-specific deviations from those person-specific means. Additionally, to account for differences in variability (= the extent of lability in each actor's and partner's perceived control), we considered additional person-level variables that quantified the extent of lability in each actor's and partner's perceived control. This is important because the variability of a given variable can affect the strength of associations this variable exhibits with other variables. Specifically, *actor*

perceived control iSD_i and *partner perceived control* iSD_i were each calculated as the intraindividual standard deviation of the relevant person's repeated measures of momentary perceived control.

Individual and dyad covariates. Acknowledging known correlates of perceived control and negative affect (Drewelies, Wagner, Tesch-Römer, Heckhausen, & Gerstorf, 2017; Lachman, 2006), our multilevel models for dyadic data include relevant individual-level and partner-level difference factors, including socio-demographic characteristics (age, gender, education), physical comorbidity, and cognitive functioning. In particular, older age, being a woman, and lower education have each been associated with lower perceived control and higher negative affect (Lachman & Weaver, 1998). To illustrate, age-related vulnerability in everyday life (e.g., when confronted with increasing loss of resources) can be expected to overwhelm regulatory mechanisms (Charles, 2010) and thus make it necessary to buffer and compensate individual-level compromised emotion regulation capabilities. Empirical studies have long shown that women often report perceiving less control over their lives (Gatz & Karel, 1993; Ross & Mirowsky, 1992, 2002) and to report more negative affect (Costa et al., 1987; Fujita, Diener, & Sandvik, 1991). Also, higher education may indicate that people have additional resources to draw from and more opportunity to exert control over their lives (Ross & Mirowsky, 2002), which in may help them cope with stressors and challenges. It is also well established that being in better physical health is linked to both higher perceptions of control and lower negative affect (Roepke & Grant, 2011). Finally, levels of cognitive functioning are often closely linked with perceptions of control and negative affect in old age (Caplan & Schooler, 2003; Hertzog, Kramer, Wilson, & Lindenberger, 2008). For example, poor cognitive functioning often indicates reduced ability to harness the resources needed to down-regulate emotions, and thereby may amplify negative affect (Watson, Clark, & Tellegen, 1988).

Analyses thus controlled for socio-demographic variables, comorbidity, and cognitive functioning. *Age* was calculated as the difference between the date of the interview and a participant's date of birth and scaled in years. *Gender* was a dichotomous variable (0 = women; 1 = men). *Education* was assessed as years of education (range 7 to 19). *Comorbidity* was measured as the number of self-reported medical diagnoses indicated on an 11-item checklist (e.g., diabetes, high blood pressure, cancer, asthma). *Cognitive Functioning* was measured at the end of the experience sampling protocol with the Digit Symbol test (Wechsler, 1955), a highly reliable and well-established measure of older adults' perceptual speed (Hoyer, Stawski, Wasylyshyn, & Verhaeghen, 2004; Tucker-Drob, Briley, Starr, & Deary, 2014).

Data Analysis

Taking advantage of and accommodating the nested nature of the experience sampling data (repeated occasions nested within individuals within dyads), hypotheses were tested within a multilevel modeling (MLM) framework using an actor-partner interdependence model (Bolger & Laurenceau, 2013; Kenny, Kashy, & Cook, 2006). Following usual practice, we use the term "actor effects" to refer to estimates for a given individual and the term "partner effects" to refer to estimates for associations between partners. Here, we use the model to examine associations between a person's perceived control and his/her *own* negative affect (i.e., actor effects) and associations between her/his partner's perceived control and her/his own negative affect (i.e., partner effects), while accounting for the statistical non-independence of members in a dyad and a variety of covariates. Models were specified as

$$\textit{Negative Affect}_{ti} = \beta_{0i} + \beta_{1i}(\textit{actor perceived control WP}_{ti}) + \beta_{2i}(\textit{partner perceived control WP}_{ti}) + e_{ti}, \quad (1)$$

where *negative affect*$_{ti}$ of person *i* at time *t* is a function of a person-specific intercept coefficient, indicating baseline level of negative affect, β_{0i}; a person-specific coefficient

indicating the extent to which negative affect is associated with the individual's concurrent perceived control, β_{1i}; the extent to which the individual's momentary negative affect is coupled with his/her partner's current perceived control, β_{2i}; and residual error, e_{ti}. Between-person differences in the person-specific coefficients were, after trimming of non-significant interactions, modeled as

$$\beta_{0i} = \gamma_{00H}\,(husband_i) + \gamma_{00W}\,(wife_i) + \gamma_{01}\,(age_i) + \gamma_{02}\,(education_i) + \gamma_{03}\,(comorbidity_i) + \gamma_{04}\,(cognitive\ functioning_i) + \gamma_{05}\,(actor\ perceived\ control\ BP_i) + \gamma_{06}\,(actor\ perceived\ control\ iSD_i) + \gamma_{07}\,(partner\ perceived\ control\ BP_i) + \gamma_{08}\,(partner\ perceived\ control\ iSD_i) + \gamma_{09}\,(age_i\ x\ actor\ perceived\ control\ BP_i) + \gamma_{010}\,(comorbidity_i\ x\ actor\ perceived\ control\ BP_i) + u_{0Hi}\,(husband_i) + u_{0Wi}\,(wife_i), \quad (2)$$

$$\beta_{1i} = \gamma_{10} + \gamma_{12}\,(actor\ perceived\ control\ BP_i), \quad (3)$$

$$\beta_{2i} = \gamma_{20}, \quad (4)$$

where γ_{00H} and γ_{00W} indicate the expected levels of negative affect for the prototypical husband and wife, respectively; γ_{10} indicates the prototypical within-person association between negative affect and perceived control (actor effect), and γ_{20} indicates the prototypical within-dyad association between negative affect and partner's perceived control (partner effect). Other parameters indicate the extent to which interindividual differences in baseline level of negative affect and the actor effect are related to individuals' age, education, comorbidity, cognitive functioning, average level and variability in own and partner's perceived control. Importantly, role specificity within a dyad was accommodated through inclusion of dummy indicators, $husband_i$ and $wife_i$ (see Bolger & Laurenceau, 2013) that allowed for gender-specific variance of the between-person random effects, σ^2_{u0H} and σ^2_{u0W} that could covary,

$\sigma_{u0H,u0W}$, independently of occasion-specific residual variance, σ^2_{eH} and σ^2_{eW}, that might also covary within-dyad, $\sigma_{eH,eW}$, and between successive occasions (AR1). While only a minimal set of random effects was included in the final model, the pattern of results was robust across a variety of configurations. All models were estimated using SAS Proc Mixed (Littell, Miliken, Stoup, Wolfinger, & Schabenberger, 2006) with incomplete data treated as missing-at-random (Little & Rubin, 1987) under full information maximum likelihood estimation. All predictors were centered at person and/or sample means. Statistical significance was evaluated at $\alpha = .05$.

Results

Descriptive statistics and intercorrelations at baseline assessment are presented in Table 1. It can be obtained that both higher actor perceived control and higher partner perceived control were indeed associated with lower negative affect ($r_H = -.32$; $r_H = -.07$; $r_W = -.27$; $r_W = -.15$). Older age, lower education and higher comorbidity were, to a small degree, related to lower levels of perceived control ($r = -.04$; $r = .06$; $r = -.04$).

The Role of Perceived Control for Negative Affect in Daily Life

Results from our multilevel actor–partner interdependence model are presented in Table 2. Estimated baseline level of negative affect was $\gamma_{00H} = 38.660$ and $\gamma_{00W} = 41.738$ for husbands and wives, respectively, with interindividual differences in level being associated with lower cognitive functioning ($\gamma_{04} = -0.256, p = 0.001$), and other unmeasured variables ($\sigma^2_{u0H} = 106.130$ and $\sigma^2_{u0W} = 78.482$), but not with age ($\gamma_{01} = -0.201, p = 0.313$), years of education ($\gamma_{02} = 0.183, p = 0.547$) or comorbidity ($\gamma_{03} = 0.505, p = 0.087$). As expected, there was evidence of both between-person and within- person *actor effects*. Looking across persons, people with higher overall perceived control (BP) had lower overall negative affect ($\gamma_{07} = -1.573, p = 0.005$), an association that was moderated by both age and comorbidity, with the association being less pronounced among older individuals ($\gamma_{09} = 0.021, p = 0.005$)

and more pronounced among individuals with more comorbidity ($\gamma_{010} = -0.031, p = 0.005$). More importantly for daily life, moments when an individual's perceived control was higher than usual (WP) were also characterized by lower than usual momentary negative affect ($\gamma_{10} = -0.247, p < 0.001$), with this within-person association moderated by overall level of perceived control ($\gamma_{12} = -0.006, p < 0.001$). This within-person level association indicates that when a person experiences less negative affect than he or she usually does, he or she likely experiences higher levels of control than usually in that moment. Select aspects of the actor effects are shown in the left-hand Panel A of Figure 1. Specifically, it can be seen that participants who perceived more momentary control than usual reported lower negative affect. Lastly, larger variability in perceived control was associated with higher negative affect ($\gamma_{06} = 0.231, p < 0.001$).

The Role of Partner Perceived Control for Negative Affect in Daily Life

Our main interest was the role of partner perceived control for individuals' momentary negative affect. In addition to the actor effects noted above, there was evidence of *partner effects*. Interestingly, these did not manifest across persons. Having a partner with higher overall level of perceived control (BP) was not associated with individuals' overall level of negative affect ($\gamma_{07} = -0,006, p = 0.853$). Rather, and as expected, individuals' negative affect was lower ($\gamma_{20} = -0.061, p < 0.001$) in moments when their partner's perceived control (WP) was higher than usual. To illustrate the size and direction of effects, the right-hand Panel B of Figure 1 shows the within-couple associations: in moments where the partner perceived more momentary control than usual, the actor reported lower negative affect.

In follow-up analyses, we additionally controlled for relationship length, relationship type, relationship satisfaction, and the momentary presence of the partner. As one might expect, all variables exhibited main effects typically reported in the literature such that older couples in longer relationships and people more satisfied with their relationship reported less

negative affect (Choi, Yorgason, & Johnson, 2016; Hoppmann et al., 2011). Most important for our research questions, however, the general pattern of actor and partner associations between perceived control and negative affect was the same when accounting for these additional factors.

Discussion

The key objective of the current study was to examine dyadic associations of both within- and between-person perceived control and negative affect among older romantic partners. Within- and between-person, higher momentary perceived control was, as expected, associated with lower negative affect. Independent of these actor effects, higher momentary perceived control of the partner was additionally and uniquely associated with actors' lower negative affect.

The Role of Perceived Control for Negative Affect in Daily Life

In the current report, our within-person results from multilevel models corroborate previous research by utilizing time-sampling assessment data obtained 6 times per day over a week from a sample of German older couples (Bye & Pushkar, 2009; Hay & Diehl; 2010; Koffer et al., 2017; Neupert et al., 2007; Ong et al., 2005; Tighe et al., 2015; Windsor & Anstey, 2010). Our results indicate that higher momentary perceived control was associated with lower negative affect and so are in line with previous research highlighting the role of momentary control beliefs for negative affect (Hay & Diehl, 2010; Lazarus & Folkman, 1984; Neupert al., 2007; Koffer et al., 2017). Previous empirical studies suggest that such associations between perceived control and negative affect operate via direct and indirect pathways (Neupert et al., 2007; Ong et al., 2005; Windsor & Anstey, 2010). For example, individuals who perceive themselves as having more general and momentary control over current life circumstances might make better use of resources to deal with the challenges of everyday life and buffer negative affect. It would be highly informative for future research to examine these and other pathways through which momentary perceived control operates more

thoroughly. For example, perceived control might be linked to negative affect via stress regulatory processes (Hay & Diehl, 2010; Ong et al., 2005). To illustrate, conceptual models suggest that daily perceived control is associated with adapting to stress, which in turn contributes to the maintenance of well-being (Diehl, Hay, & Chui, 2012). Perceiving more control over one's life might enable an individual to better cope with stressors and therefore buffer the psychological and physiological impact of stress on negative affect (Neupert et al. 2007; Ong et al., 2005). Interestingly, we found that associations of momentary perceived control with negative affect were strongest for those at lower levels of average perceived control, indicating that between-person differences in perceived control matter for how momentary perceived control relates to negative affect. One reason could be that especially for those individuals who perceive chronically little control over their lives, moments in which they perceive more control than usual might more effectively boost their strategy use and thus be more strongly linked to reducing negative affect. Associations could of course also work the other way around in that perceiving little control over one's life in general combined with perceiving even fewer control in this very moment impedes people's negative affect particularly strong. Future more mechanism-oriented research is needed to better understand the nature and direction of such associations. Results also suggested that larger variability in perceived control was associated with higher negative affect. However, we remain cautious not to substantively over-interpret these coefficients because these are primarily included for methodological reasons (e.g., accommodate that the size of covariation between two variables is shaped by the size of the variation the two constituent variables evince).

We also found that age moderated the association between general perceived control and negative affect suggesting that lower perceived control was linked to elevated negative affect in younger individuals. It is possible that repeated loss experiences in older age may lead to a greater acceptance of being less in control, thus reducing the relevance of perceived

control for negative affect or that having little control when people are relatively young violates individual and partner expectations (Charles, 2010). In line with previous findings obtained from long-term longitudinal data (Lachman, 2006; Roepke & Grant, 2011; Windsor & Anstey, 2010), our current micro-longitudinal design also revealed evidence that lower perceived control was linked to elevated negative affect in individuals with poor health. This suggests that especially those with lower levels of perceived control and in poor health might have difficulties to achieve desired outcomes such as following one's daily routines, which in turn link result in elevated negative affect.

The Role of Partner Perceived Control for Negative Affect in Daily Life

Previous research has shown that emotions, and particularly negative affect, travels between partners via processes of emotional contagion (Berg, Wiebe, & Butner, 2011; Larson & Almeida, 1999). Our findings on the association between partner perceived control and negative affect in daily life take this line of research one step further by providing additional insights into the social contours that shape affective well-being. Recognizing that coping resources may not be limited to the individual, but also expand to the dyad, is pivotal for our understanding of the role of perceived control for affective well-being in everyday life.

Our results are neatly in line with conceptual work suggesting that findings obtained at the between-person level do not necessarily converge with those obtained at the within-person level (e.g., Brose et al., 2014; Hamaker et al., 2007; Voelkle et al., 2014). Our results imply that rather than the level at which perceptions of control operate, what appears of prime importance for adaptation is the way perceptions of control fluctuate within a day from moment to moment as couples go about the routines of their daily lives.

It will be highly instructive for future research to target some of the underlying mechanisms through which daily perceived control shapes negative affect among spouses. To illustrate, it is an open question whether partners who in a given moment have higher perceived control than usual actively show specific behaviors towards their spouses (e.g.,

verbal support, physical intimacy) that effects the actor's own affective well-being. As an alternative, partners perceiving higher control in a given situation than usual may have exhibited changes in their own behavior in that situation (e.g., behavioral adaption towards a challenging situation) and thus have passively shaped the actor's affective well-being.

Limitation and Outlook

We note sample, measure, and design limitations of our study. First, participants were drawn from a convenience sample. Our results may thus not generalize to, for example, more vulnerable segments of the population, such as those living in lower socioeconomic contexts (Caplan & Schooler, 2003; Vargas Lascano et al., 2015), or people approaching death (Gerstorf, Heckhausen, Ram, Infurna, Schupp, & Wagner, 2014). It is possible that pervasive mortality-related processes might diminish or override both the actor and partner effects of perceived control on negative affect at the end of life. Alternatively, it is possible that the end of life operates as a testing-the-limits situation during which such associations become even more relevant and visible (Hülür, Infurna, Ram, & Gerstorf, 2013). Because our findings were derived from long-term married couples it is an open question whether and how partner dynamics observed here generalize to older couples who have just gotten together, but who may draw from previous relationship experiences (but with another partner).

Considering the measures, momentary perceived control was measured using a single self-report of a general feeling. The generality of the item may overshadow important differences and insights that could be gained from more domain-specific measures of perceived control (Lachman & Weaver, 1998). For example, it is possible that perceived control over one's health might be less closely linked to negative affect among partners than perceived control over one's social life because health-specific perceptions of control might be more immediately relevant to the actor than to the partner. We also note that multifaceted processes operate that might exacerbate or buffer negative affect in everyday life. In the present study, our selection of indicators was restricted by the measures available from the

study assessment protocol, and we thus focused solely on momentary perceived control. It would be highly informative to examine how momentary perceived control might operate alongside psychosocial risk and resilience factors such as perceived stress (Hay & Diehl, 2010). To illustrate, perceived control might be especially relevant in high stress compared to low-stress situations (Koffer et al., 2017).

Relatedly, an additional inclusion of multiple measures of negative affect would have been highly informative so as to test whether and how perceptions of control in older partners are differentially linked to affective states. For example, it is possible that associations between actor and partner perceptions of control are especially linked to high-arousal negative affective states, but not to low arousal affect because high-arousal negative affect states might serve as a cue that the partner is in need (e.g., Kessler & Staudinger, 2009; Verhofstadt et al., 2008).

In an observational study like ours, it is not possible to draw causal inferences about how daily perceived control and negative affect are linked within older couples. With the set-up of our models, perceived control was invoked as a predictor of interindividual differences in and intraindividual fluctuations of negative affect, but it could also be the other way around, with negative affect preceding and predicting subsequent perceived control. To illustrate, daily negative affect of one partner could plausibly result in lower perceptions of control of both partners because changes in encountering everyday situations and thus mastering everyday life might be initiated. To better understand the directionality of perceived control–affect associations among older couples, more mechanism-oriented research is needed that utilizes a larger number of and more closely spaced measurement occasions. With the current design, it was for example not possible to examine the gender specificity of dyadic associations between perceived control and negative affect. It may be highly informative to examine such questions more thoroughly in future research because cross-sectional evidence on dyadic associations of psychosocial resources in general suggests

that husbands may benefit more from wives than the other way around (e.g., Roberts et al., 2009).

Finally, we note that the six times per day time-sampling assessments in our study took place within a single week. Integrating macro- and micro-longitudinal studies (Gerstorf, Hoppmann, & Ram, 2014) would allow for more robust examination of how long-term changes in perceived control shape and are shaped by short-term fluctuations in perceived control and negative affect. To illustrate, individuals who experience long-term decline in perceived control might become more vulnerable to short-term fluctuations in both their own and their partner's perceived control.

Conclusions

The current study examined links between momentary perceived control and negative affect in the everyday lives of older couples. As hypothesized, in moments an individual's perceived control higher, their negative affect was lower. Our study adds to previous work on perceived control–affect associations by showing that over and above these actor effects, there are also partner effects. In the moments, a partner's perceived momentary control was also higher, and individual's negative affect was even lower. The findings emphasize the theoretical and practical need to layer a dyadic perspective on top of study of individual development, particularly for understanding older adults' well-being in everyday life. We hope that our conceptual reasoning forms one stepping stone towards developing an overarching theoretical framework that helps embed and structure empirical findings on within-person and between-person associations of perceived control with affective well-being in older couples. More mechanism-oriented research is needed to better understand the underlying pathways through which perceptions of control shape older adults' negative affect.

Words: 5,735

References

Antonucci, T. C. (2001). Social relations: An examination of social networks, social support, and sense of control. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (pp. 427–453). San Diego, CA: Academic Press.

Baltes, M.M., Baltes, P.B. (1986). *The psychology of control and aging*. Hillsdale, NJ: Erlbaum.

Berg, C. A., Wiebe, D. J., & Butner, J. (2011). Affect covariation in marital couples dealing with stressors surrounding prostate cancer. *Gerontology*, *57*, 167-172. doi: 10.1159/000318642

Bolger, N., & Laurenceau, J.-P. (2013). *Intensive longitudinal methods: An introduction to diary and experience sampling research*. New York, NY: Guilford Press.

Bookwala, J., & Schulz, R. (1996). Spousal similarity in subjective well-being: The cardiovascular health study. *Psychology and Aging, 11*, 582-590. doi: 10.1037/0882-7974.11.4.582

Brinberg, M., Ram, N., Hueluer, G., Brick, T. R., & Gerstorf, D. (2017). Analyzing dyadic data using Grid-Sequence Analysis: Inter-dyad differences in intra-dyad dynamics. *Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*. doi: 10.1093/geronb/gbw160

Bronfenbrenner, U. (1986). Recent advances in research on the ecology of human development. In R. K. Silbereisen, K. Eyferth & G. Rudinger (Eds.), *Development as action in context*. Berlin-Heidelberg, Germany: Springer.

Brose, A., Voelkle, M. C., Lövdén, M., Lindenberger, U., Schmiedek, F. (2014). Differences in the between-person and within-person structures of affect are a matter of degree. *European Journal of Personality*, 29, 55–71. doi: 10.1002/per.1961

Bye, D., & Pushkar, D. (2009). How need for cognition and perceived control is differentially linked to emotional outcomes in the transition to retirement. *Motivation and Emotion*, *33*, 320–332. doi:10.1007/s11031-009-9135-3

Carstensen, L. L., Gottman, J. M., & Levenson, R. W. (1995). Emotional behavior in long-term marriage. *Psychology and Aging, 10*, 140-149. doi: 10.1037/0882- 7974.10.1.140

Carstensen, L. L., Graff, J., Levenson, R. W., & Gottman, J. M. (1996). Affect in intimate relationships: The developmental course of marriage. In C. Magai & S. H. McFadden

(Eds.), Handbook of emotion, adult development, and aging (pp. 227-247). doi:10.1016/b978-012464995-8/50014-5

Caplan, L. J., & Schooler, C. (2003). The roles of fatalism, self-confidence, and intellectual resources in the disablement process in older adults. *Psychology and Aging*, *18*, 551–561. doi:10.1037/0882-7974.18.3.551

Charles, S. T. (2010). Strength and vulnerability integration: A model of emotional well-being across adulthood. *Psychological Bulletin*, *136*, 1068–1091. doi:10.1037/a0021232

Choi, H., Yorgason, J. B., & Johnson, D. R. (2016). Marital quality and health in middle and later adulthood: Dyadic associations. *Journal of Gerontology: Social Sciences*, *71*, 154–164. doi:10.1093/geronb/gbu222

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98*, 310–357. doi:10.1037/0033-2909.98.2.310

Costa, P. T., Zonderman, A. B., McCrae, R. R., Huntley, J. C., Locke, B. Z., & Barbano, H. E. (1987). Longitudinal Analyses of Psychological Well-being in a National Sample: Stability of Mean Levels. *Journal of Gerontology*, *42*, 50–55. doi:10.1093/geronj/42.1.50

Diehl, M., Hay, E. L., & Chui, H. (2012). Personal risk and resilience factors in the context of daily stress. In B. Hayslip & G. C. Smith (Eds.), *Annual Review of Gerontology and Geriatrics* (Vol. 32). *Emerging perspectives on resilience in adulthood and later life* (pp. 251-274). New York, NY: Springer Publishing. http://dx.doi.org/10.1891/0198-8794.32.251

Drewelies, J., Wagner, J., Tesch-Römer, C., Heckhausen, J., & Gerstorf, D. (2017). Perceived control across the second half of life: The role of physical health and social integration. *Psychology and Aging*, *32*, 76-92. doi: 10.1037/pag0000143

Drewelies, J., Chopik, W. J., Hoppmann, C. A., Smith, J. & Gerstorf, D. (2016). Linked lives: Dyadic associations of mastery beliefs with health (behavior) and health (behavior) change among older partners. *Journals of Gerontology, Series B: Psychological Sciences and Social Sciences, gbw058*. doi: 10.1093/geronb/gbw058

Eizenman, D. R., Nesselroade, J. R., Featherman, D. L., & Rowe, J. W. (1997). Intraindividual variability in perceived control in a older sample: The MacArthur successful aging studies. *Psychology and Aging*, *12*, 489-502. doi: 10.1037/0882-7974.12.3.489

Fujita, F., Diener, E., & Sandvik, E. (1991). Gender differences in negative affect and well-being: The case for emotional intensity. *Journal of Personality and Social Psychology*, *61*, 427–434. doi:10.1037/0022-3514.61.3.427

Gatz, M., & Karel, M. J. (1993). Individual change in perceived control over 20 years. *International Journal of Behavioral Development*, *16,* 305-322. doi:10.1177/016502549301600211

Gerstorf, D., Heckhausen, J., Ram, N., Infurna, F. J., Schupp, J., & Wagner, G. G. (2014). Perceived personal control buffers terminal decline in well-being. *Psychology and Aging*, *29*, 612-625. doi: 10.1037/a0037227

Gerstorf, D., Windsor, T., Hoppmann, C. A., & Butterworth, P. (2013). Longitudinal change in spousal similarities in mental health: Between-couple and within-couple perspectives. *Psychology and Aging*, *28*, 540-554. doi: 10.1037/a0032902

Hamaker, E. L., Nesselroade, J. R., & Molenaar, P. C. M. (2007). The integrated trait-state model. *Journal of Research in Personality, 41*(2), 295-315. doi:10.1016/j.jrp.2006.04.003

Hay, E. L., & Diehl, M. (2010). Reactivity to daily stressors in adulthood: The importance of stressor type in characterizing risk factors. *Psychology and Aging*, *25*, 118–131.doi:10.1037/a0018747

Helm, J. L., Sbarra, D., & Ferrer, E. (2012). Assessing cross-partner associations in physiological responses via coupled oscillator models. *Emotion*, *12*, 748–762. doi:10.1037/a0025036

Hertzog, C., Kramer, A. F., Wilson, R. S., & Lindenberger, U. (2008). Enrichment Effects on Adult Cognitive Development. *Psychological Science in the Public Interest*, *9*, 1–65. doi:10.1111/j.1539-6053.2009.01034.x

Hoffman, L., & Stawski, R. S. (2009). Persons as contexts: Evaluating between-person and within-person effects in longitudinal analysis. *Research in Human Development*, *6*, 97-120. doi: 10.1080/15427600902911189

Hoppmann, C. A., & Gerstorf, D. (2016). Social interrelations in aging: The sample case of married couples. In K. W. Schaie & S. L. Willis (Eds.), *Handbook of the Psychology of Aging* (8th ed., pp. 263-277). San Diego, CA: Elsevier. doi: 10.1016/B978-0-12-411469-2.00014-5

Hoppmann, C., Gerstorf, D., Willis, S. L., & Schaie, K. W. (2011). Spousal interrelations in happiness in the Seattle Longitudinal Study: Considerable similarities in levels and changes over time. *Developmental Psychology, 47*, 1-8. doi: 10.1037/a0020788

Hueluer, G., Hoppmann, C. A., Rauers, A., Schade, H., Ram, N., & Gerstorf, D. (2016). Empathic accuracy for happiness in the daily lives of older couples: Fluid cognitive performance predicts pattern accuracy among men. *Psychology and Aging*, *31*, 545-552. doi:10.1037/pag0000109

Hueluer, G., Infurna, F. J., Ram, N., & Gerstorf, D. (2013). Cohorts based on decade of death: No evidence for secular trends favoring later cohorts in cognitive aging and terminal decline in the AHEAD study. *Psychology and Aging*, *28*, 115–127. doi:10.1037/a0029965

Hoyer, W. J., Stawski, R. S., Wasylyshyn, C., & Verhaeghen, P. (2004). Adult age and digit symbol substitution performance: A meta-analysis. *Psychology and Aging*, *19*, 211–214. http://dx.doi.org/10.1037/0882-7974.19.1.211

Kenny, D. A., Kashy, D.A., & Cook, W. L. (2006). *Dyadic data analysis*. New York, NY: Cambridge University Press

Kessler, E.-M., & Staudinger, U. M. (2009). Affective experience in adulthood and old age: The role of affective arousal and perceived affect regulation. *Psychology and Aging*, *24*, 349–362. doi:10.1037/a0015352

Koffer, R., Drewelies, J., Almeida, D., Conroy, D., Pincus, A., Gerstorf, D., & Ram, N. (2017). The role of general and daily control beliefs for affective stressor-reactivity across adulthood and old age. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*. doi: 10.1093/geronb/gbx055

Kunzmann, U. (2008). Differential age trajectories of positive and negative affect: Further evidence from the Berlin Aging Study. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *63*, 261–270. doi:10.1093/geronb/63.5.p261

Kunzmann, U., Little, T., & Smith, J. (2002). Perceiving Control: A double-edged sword in old age. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 57*, 484–491. doi:10.1093/geronb/57.6.p484

Larson, R. W., & Almeida, D. M. (1999). Emotional transmission in the daily lives of families: A new paradigm for studying family process. *Journal of Marriage and the Family*, *61*, 5–20. doi:10.2307/353879

Lachman, M. E. (2006). Perceived control over aging-related declines: Adaptive beliefs and behaviors. *Current Directions in Psychological Science*, *15*, 282–286. doi:0.1111/j.1467-8721.2006.00453.x

Lachman, M., & Weaver, S. L. (1998). Sociodemographic variations in the sense of control by domain: Findings from the MacArthur studies of midlife. *Psychology and Aging*, *13*, 553–562. doi:10.1037/0882-7974.13.4.553

Lachman, M. E., Neupert, S. D., & Agrigoroaei, S. (2012). The relevance of a sense of control for health and aging. In K. W. Schaie & S. L. Willis (Eds.), *Handbook of the psychology and aging* (7th edition, pp. 175-190). New York, NY: Elsevier. doi: 10.1016/B978-0-12-380882-0.00011-5

Lang, F. R. (2001). Regulation of social relationships in later adulthood. *Journal of Gerontology: Psychological Sciences, 56B*, 321-326. doi: 10.1093/geronb/56.6.P321

Larson, R. W., & Almeida, D. M. (1999). Emotional transmission in the daily lives of families: A new paradigm for studying family process. *Journal of Marriage and the Family*, *61*, 5-20. doi: 10.2307/353879

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.

Littell, R. C., Milliken, G. A., Stroup, W. W., Wolfinger, R. D., & Schabenberger, O. (2006). *SAS for mixed models* (2nd ed.). Cary, NC: SAS Institute.

Little, R. J. A., & Rubin, D. B. (1987). *Statistical Analysis with Missing Data*. New York, NY: J. Wiley.

Liu, S., Rovine, M. J., Cousino Klein, L., & Almeida, D. M. (2013). Synchrony of diurnal cortisol pattern in couples. *Journal of Family Psychology*, *27*, 579–588. doi:10.1037/a0033735

Martire, L. M., Schulz, R., Helgeson, V. S., Small, B. J., & Saghafi, E. M. (2010). Review and meta-analysis of couple-oriented interventions for chronic illness. *Annals of Behavioral Medicine*, *40*, 325–342. doi:10.1007/s12160-010-9216-2

Mejía, S. T., & Gonzalez, R. (2017). Couples' shared beliefs about aging and implications for future functional limitations. *The Gerontologist*, *57*, 149–159. doi:10.1093/geront/gnx071

Nesselroade, J. R. (1991). Interindividual differences in intraindividual change. In L. M. Collins & J. L. Horn (Eds.), *Best methods for the analysis of change: Recent advances, unanswered questions, future directions* (pp. 92-105). doi: 10.1037/10099-006

Neupert, S. D., Almeida, D. M., & Charles, S. T. (2007). Age differences in reactivity to daily stressors: The role of personal control. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, *62*, 216–225. doi:10.1093/geronb/62.4.p216

Ong, A. D., Bergeman, C. S., & Bisconti, T. L. (2005). Unique effects of daily perceived control on anxiety symptomatology during conjugal bereavement. *Personality and Individual Differences*, *38*, 1057–1067. doi:10.1016/j.paid.2004.07.004

Roberts, B. W., Smith, J., Jackson, J. J., & Edmonds, G. (2009). Compensatory Conscientiousness and Health in Older Couples. *Psychological Science*, *20*, 553–559. doi:10.1111/j.1467-9280.2009.02339.x

Roepke, S. K., & Grant, I. (2011). Toward a more complete understanding of the effects of personal mastery on cardiometabolic health. *Health Psychology*, *30*, 615–32. doi:0.1037/a0023480

Ross, C. E., & Mirowsky, J. (1992). Households, employment, and the sense of control. *Social Psychology Quarterly*, *55*, 217. doi:10.2307/2786793

Ross, C. E., & Mirowsky, J. (2002). Age and the gender gap in the sense of personal control. *Social Psychology Quarterly*, *65*, 125–145. doi:10.2307/3090097

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*, 68–78. doi:10.1037/0003-066x.55.1.68

Sheldon, K. M., Elliot, A. J., Kim, Y., & Kasser, T. (2001). What is satisfying about satisfying events? Testing 10 candidate psychological needs. *Journal of Personality and Social Psychology*, *80*, 325–339. doi:10.1037//O022-3514.80.2.325.

Skinner, E. A. (1996). A guide to constructs of control. *Journal of Personality and Social Psychology*, *71*, 549–570. doi:10.1037/0022-3514.71.3.549

Tighe, C. A., Dautovich, N. D., & Allen, R. S. (2014). Regularity of daily activities buffers the negative impact of low perceived control on affect. *Motivation and Emotion*, *39*, 448–457. doi:10.1007/s11031-014-9456-8

Tucker-Drob, E. M., Briley, D. A., Starr, J. M., & Deary, I. J. (2014). Structure and correlates of cognitive aging in a narrow age cohort. *Psychology and Aging*, *29*, 236 –249. http://dx.doi.org/10.1037/a0036187

Vargas Lascano, D. I., Galambos, N. L., Krahn, H. J., & Lachman, M. E. (2015). Growth in perceived control across 25 years from the late teens to midlife: The role of personal and parents' education. *Developmental Psychology*, *51*, 124-135. doi:0.1037/a0038433

Verhofstadt, L. L., Buysse, A., Ickes, W., Davis, M., & Devoldre, I. (2008). Support provision in marriage: The role of emotional similarity and empathic accuracy. *Emotion*, *8*, 792–802. doi:10.1037/a0013976

Voelkle, M., Brose, A., Schmiedek, F., & Lindenberger, U. (2014). Toward a unified framework for the study of between-person and within-person structures: Building a bridge between two research paradigms. *Multivariate Behavioral Research*, *49*, 193-213. doi:10.1080/00273171.2014.889593

Watson, D., Clark, A., & Tellegen, A. (1988). Development and validation of brief measure of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology*, *54*, 1063–1070. doi:10.1037/0022-3514.54.6.1063

Wechsler, D. (1955). *Manual for the Wechsler Adult Intelligence Scale*. New York, NY: Psychological Corporation.

Windsor, T. D., & Anstey, K. J. (2010). Age differences in psychosocial predictors of positive and negative affect: A longitudinal investigation of young, midlife, and older adults. *Psychology and Aging*, *25*, 641–652. doi:10.1037/a0019431

Windsor, T. D., Ryan, L. H., & Smith, J. (2009). Individual well-being in middle and older adulthood: Do spousal beliefs matter? *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *64*, 586–596. doi:10.1093/geronb/gbp058

Table 1
Descriptive Statistics and Intercorrelations for Variables in Study.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	$M_{husbands}$	$SD_{husbands}$
(1) Negative affect (0–100)		–0.06*	–0.05*	0.26*	–0.14*	–0.32*	–0.07*	14.60*	15.12
(2) Age (67–93)	0.06*		–0.19*	–0.11*	–0.26*	–0.04*	–0.04*	76.29*	3.71
(3) Education (7–19)	–0.08*	–0.02		–0.13*	0.12*	0.06*	–0.05*	11.21*	2.29
(4) Comorbidity (0–11)	0.14*	0.22*	–0.07*		–0.06*	–0.04*	0.05*	3.39*	2.31
(5) Digit Symbol (12–63)	–0.14*	–0.33*	0.17*	–0.09*		0.01	0.09*	39.42*	7.94
(6) Perceived control (BP) (0–100)	–0.27*	–0.05*	0.12*	0.03	0.07*		0.10*	66.85*	26.64
(7) Partner perceived control (BP) (0–100)	–0.15*	–0.10*	0.24*	–0.05*	0.05*	0.10*		65.60*	28.84
M_{wives}	18.55*	74.18*	10.68*	3.81*	41.25*	65.64*	66.91*		
SD_{wives}	1.65	3.53	2.23	2.42	9.48	28.84	26.61		

Note: $N = 87$ couples (174 individuals) who provided 38 to 42 observations per participant. Statistics for wives presented below the diagonal
and those for husbands above the diagonal. ANOVAs tested mean differences between husbands and wives. Means (*M*) and standard
deviations (*SD*), respectively, in the same row that do not share subscripts differ at $p < .05$ or below.
* $p < .05$

Table 2

Multilevel model examining negative affect (dependent variable) as a function of individual perceived control, partner perceived control, and age, education, comorbidity and cognitive functioning.

	Estimates	(SE)
Fixed Effects		
Husband, γ_{00H}	38.660*	(16.693)
Wife, γ_{00M}	41.738*	(16.323)
Age, γ_{01}	–0.201	(0.200)
Education, γ_{02}	–0.183	(0.303)
Comorbidity, γ_{03}	0.505	(0.295)
Cognitive functioning, γ_{04}	–0.256*	(0.080)
Perceived control BP, γ_{05}	–1.573*	(0.553)
Perceived control WP, γ_{10}	–0.247*	(0.023)
iSD perceived control, γ_{06}	0.231*	(0.082)
Partner perceived control BP, γ_{07}	–0.006	(0.034)
Partner perceived control WP, γ_{20}	–0.061*	(0.010)
iSD partner perceived control, γ_{08}	–0.058	(0.083)
Age × Perceived control BP, γ_{09}	0.021*	(0.007)
Comorbidity × Perceived control BP, γ_{010}	–0.031*	(0.015)
Perceived control BP × Perceived control WP, γ_{12}	–0.006*	(0.001)
Random effects		
Between Couples		
Variance of Intercept Husbands ($\sigma^2_{u_{0\mathrm{H}}}$)	50.69*	(13.807)
Variance of Intercept Wives ($\sigma^2_{u_{0\mathrm{W}}}$)	113.550*	(18.654)
Variance perceived control WP Husbands ($\sigma^2_{u_{1\mathrm{H}}}$)	0.074*	(0.016)
Variance perceived control WP Wives ($\sigma^2_{u_{1\mathrm{W}}}$)	0.042*	(0.009)
Variance partner perceived control WP Husbands ($\sigma^2_{u_{2\mathrm{H}}}$)	0.004*	(0.002)
Variance partner perceived control WP Wives ($\sigma^2_{u_{2\mathrm{W}}}$)	0.007*	(0.004)
Covariance Intercept Husbands Wives ($\sigma_{u_{0\mathrm{H}},u_{0\mathrm{W}}}$)	50.690*	(13.807)
Covariance Husband's perceived control WP Husband's intercept ($\sigma_{u_{1\mathrm{H}},u_{0\mathrm{H}}}$)	–12.914*	(0.398)
Covariance Wife's perceived control WP Husband's intercept ($\sigma_{u_{1\mathrm{W}},u_{0\mathrm{H}}}$)	–0.371	(0.281)
Covariance Husband's perceived control WP Wife's intercept ($\sigma_{u_{1\mathrm{H}},u_{0\mathrm{W}}}$)	–10.541*	(0.430)
Covariance Wife's perceived control WP Wife's intercept ($\sigma_{u_{1\mathrm{W}},u_{0\mathrm{W}}}$)	-0.733*	(0.307)
Covariance Wife's perceived control WP Husband's perceived control WP ($\sigma_{u_{1\mathrm{W}},u_{1\mathrm{H}}}$)	0.017*	(0.009)
Covariance Husbands partner perceived control WP Husband's intercept ($\sigma_{u_{2\mathrm{H}},u_{0\mathrm{H}}}$)	–0.065	(0.148)
Covariance Husbands partner perceived control WP Wife's intercept ($\sigma_{u_{2\mathrm{H}},u_{0\mathrm{W}}}$)	0.049	(0.164)
Covariance Husbands partner perceived control WP Husband's perceived control WP ($\sigma_{u_{2\mathrm{H}},u_{1\mathrm{H}}}$)	–0.010*	(0.004)
Covariance Husbands partner perceived control WP Wife's perceived control WP ($\sigma_{u_{2\mathrm{H}},u_{1\mathrm{W}}}$)	0.002	(0.003)
Covariance Wife's partner perceived control WP Husband's intercept ($\sigma_{u_{2\mathrm{H}},u_{0\mathrm{H}}}$)	–0.066	(0.199)
Covariance Wife's partner perceived control WP Wife's intercept ($\sigma_{u_{2\mathrm{H}},u_{0\mathrm{W}}}$)	–0.167	(0.205)
Covariance Wife's partner perceived control WP Husband's perceived control WP ($\sigma_{u_{2\mathrm{W}},u_{1\mathrm{H}}}$)	0.004	(0.007)

Covariance Wife's partner perceived control WP Wives perceived control WP ($\sigma_{u_{2\mathrm{W}},u_{1\mathrm{W}}}$)	0.009*	(0.004)
Covariance Wife's partner perceived control WP Husband's partner perceived control WP ($\sigma_{u_{2\mathrm{W}},u_{2\mathrm{H}}}$)	0.002	(0.002)
Within Couples		
Residual variance Husbands (σ^2_{eH})	106.130*	(2.998)
Residual variance Wives (σ^2_{eW})	78.482*	(2.270)
Residual covariance Husbands Wives ($\sigma_{e_{\mathrm{H}}e_{\mathrm{W}}}$)	20.578*	(1.927)
Autocorrelation	0.197*	(0.015)
Fit indices		
AIC	42,428	
–2LL	42,378	

Note. N = 87 couples (174 individuals) who provided 38 to 42 observations per participant. Unstandardized estimates and *SE*s are presented. SE = Standard Error, AIC = Akaike information criterion; –2LL = –2(Log Likelihood). WP = within-person, i.e. momentary deviations from person-specific mean levels of control. BP = between-person.
* $p < .05$

I feel you, we can do this:

Partner Similarity in Emotional Experience and Dyadic Mastery in Older Couples

Hannah M. Schade[1], Johanna Drewelies[1], Gizem Hülür[2],

Christiane A. Hoppmann[3], Nilam Ram[4], & Denis Gerstorf[1]

[1]Humboldt University Berlin, Berlin, Germany

[2]University of Zurich, Zurich, Switzerland

[3]University of British Columbia, Vancouver, BC, Canada

[4]Pennsylvania State University, University Park, US

This article has been submitted for publication in GeroPsych (Hogrefe Publishing Corp) on April 4th, 2019. Please note that this version may not concur with any version published later.

Address correspondence regarding this manuscript to: Hannah M. Schade, Humboldt University Berlin, Department of Psychology, Unter den Linden 6, 10099 Berlin, Germany; phone: +49-(0)30-2093-9424; fax: +49-(0)30-2093-9351; hannah.schade@hu-berlin.de.

Abstract

Partner similarity in emotional experience has been shown to benefit relationship quality and stability. In the present study, we investigated whether similarity between partners in positive and negative affect is associated with the impression that one manages everyday life well together with the partner (*dyadic mastery*). To do so, we make use of data from 99 older couples (mean age = 75 years; mean relationship length = 45 years) obtained 6 times a day over 7 consecutive days as participants went about their everyday lives. On average, spouses differed in their affective experience by about 15% and reported very high dyadic mastery (on average, 88 on a scale ranging from 0 to 100). Analyses of actor-partner interdependence models revealed that higher (average and momentary) similarity in negative affect between partners indeed predicted higher levels of dyadic mastery among both men and women; associations were not found for of spousal similarity in positive affect. Results were unchanged when models covaried for age, health, relationship length, and relationship satisfaction. Our results point to the significance of emotional synchrony in negative emotions between partners for smooth relationship functioning. We discuss theoretical and practical implications of our findings.

Words: 194

Keywords: emotional similarity, affective well-being, dyadic mastery, couple dynamics, older couples

I feel you, we can do this:

Partner Similarity in Emotional Experience and Dyadic Mastery in Older Couples

The idea that feeling similar makes interactions and relationships fare better can look back on a long and rich tradition, as posited by the emotional similarity hypothesis (Schachter, 1959) and the emotional convergence hypothesis (Anderson, Keltner, Tiedens, & Leach, 2004). For example, more emotionally similar partner dyads have been found to report more stable and more satisfied relationships (e.g., Anderson, Keltner, & John, 2003; Gonzaga, Campos, & Bradbury, 2007). However, the nature, correlates, and consequences of emotional similarity are still not well understood (see Schoebi & Randall, 2015; Sels, Ceulemans, & Kuppens,2 2018). For example, it remains unclear whether the association of emotional similarity and positive relationship outcomes as found in younger dyads generalizes to older long-term partners. This is a highly relevant question because older couples are often particularly interdependent (see Hoppmann & Gerstorf, 2016; Lang, 2001) and spend more time with each other than younger, non-retired couples (Genadek, Flood, & Moen, 2019).

In the present study, we aim to capitalize from and extend earlier reports on emotional similarity between partners by investigating long-term married older couples using an intense experience sampling study, during which daily-life data were collected several times a day over the course of a full week as both partners were going about their everyday life routines. We applied multilevel analyses to examine spousal similarity in momentary ratings of positive affect and negative affect. Of particular interest was how between-couple differences in emotional similarity between partners relate to dyadic mastery, an indicator of smooth relationship functioning that describes how well partners manage their everyday lives together.

Emotional Similarity in Older Couples

Romantic relationships have been shown to exert a substantial influence on the affective well-being of the partners who constitute the relationship (e.g., Bookwala & Schulz,

1996; Gerstorf, Windsor, Hoppmann, & Butterworth, 2013; Hoppmann, Gerstorf, Willis, & Schaie, 2011; Windsor, Ryan, & Smith, 2009). Over time, dating partners have been shown to become more similar in their emotional experience (Anderson et al., 2003), with partners influencing each other's emotional experience through a number of different processes, including (involuntary) emotional contagion (Larson & Almeida, 1999) and active co-regulatory efforts (Butler & Randall, 2013).

The socially shaped affective experience is one of the mechanisms (Farrell, Imami, Stanton, & Slatcher, 2018) by which relationship quality even impacts health (Kiecolt-Glaser & Wilson, 2017). Whether greater emotional susceptibility and similarity between partners is for the better or the worse of the individual and the couple heavily depends on the long-term outcomes that ensue (for a discussion, see Sels et al., 2018; Butler & Randall, 2013). One possibility is that when people are in states of intense negative affect, having a partner who experiences and shares a rather complementary, more positive mood may be most beneficial. Another possibility is that this need not always be the case. For example, responding in kind to the partner's negative mood may set off an escalating feedback loop that prolongs the negative experience (see Butler & Randall, 2013), whereas responding similarly sad or worried to problems or bad news may help partners get in sync emotionally and so allow for more efficient collaborative coping and, ultimately, quicker recovery.

Feeling similarly may indeed allow partners to cooperate better (Anderson et al., 2004). For example, when motivated to have a smooth interaction with a novel interaction partner, participants adjusted their emotions to the anticipated mood of the interaction partner (Huntsinger, Lun, Sinclair, & Clore, 2009). This was not only the case for positive mood, but also, and particularly strongly, for negative mood of the anticipated interaction partner (Huntsinger et al., 2009). Also, greater similarity in both positive and negative emotional experience was associated with more stable relationships (Anderson et al., 2003). Thus, we assume that similarity in both positive affect and particularly negative affect is beneficial for

dyadic coping (see Larson & Almeida, 1999; Huntsinger et al., 2004; Berg, Wiebe, & Butner, 2011).

Dyadic Mastery in Older Couples

Considering context is essential for understanding individual well-being and development (e.g., Bronfenbrenner, 1986; Baltes, 1987; Hoppmann, Gerstorf, & Luszcz, 2011). One powerful context is formed by the people we spend our lives with (e.g., Lang, 2001), shaping cognitions, behavior, and emotional experience (see Butler, 2015). Such an interdependence is likely particularly strong between long-term romantic partners (e.g., Carstensen, Gottman, & Levenson, 1995; cf. Hoppmann & Gerstorf, 2016) who typically form one unit that has long tackled life's problems together (e.g. Hoppmann & Gerstorf, 2013; Berg & Upchurch, 2007; Sels et al., 2018). Conjointly coping with stress by means of collaborative problem-solving and emotion regulation as a couple has been termed 'collaborative coping' (Berg & Upchurch, 2007; Berg, Wiebe & Butner, 2011) or 'dyadic coping' (e.g., Falconier, Jackson, Hilpert, & Bodenmann, 2015), and has been established as an important factor for individual and relationship outcomes (e.g., Berg & Upchurch, 2007; Berg et al., 2011; Falconier et al., 2015).

In older age, dyadic coping with the partner presumably becomes even more important than at younger ages. Other social contexts are often decreasing in number, size, and relevance, and older people preferentially spend time with close and closest others (Carstensen, 1992; Lang, 2001; Genadek, Flood, & Moen, 2019). At the same time, resources and abilities decline with advancing age, making compensation through cooperation with a partner particularly valuable and often necessary (Hoppmann & Gerstorf, 2016). Thus, the resources (e.g., coping skills) of one partner can be employed by both partners. To illustrate, *each* partner's control beliefs benefit *both* partner's emotional experience (Drewelies, Schade, Hülür, Hoppmann, Ram, & Gerstorf, 2018). Maintenance of well-being and successful aging

(Rowe & Kahn, 1998) may thus depend in part on how well older partners manage to master everyday life together (Hoppmann & Gerstorf, 2016).

Little is known though about the daily-life dynamics of dyadic coping among older adult (for valuable exceptions, see Berg et al., 2011) and how these may be associated with fluctuations in emotional similarity. The present study addresses this gap by making use of data asking participants how well they master everyday life with their partner several times a day over the course of one week. For this specific assessment of dyadic coping, we employ the term 'dyadic mastery', given its emphasis on 'mastering' everyday life. Because individual mastery beliefs are often closely tied to affect (e.g., Neupert, Almeida, & Charles, 2007; Ong, Bergeman, & Bisconti, 2005; Windsor & Anstey, 2010; Bye & Pushkar, 2009; Koffer et al., 2017), we expect dyadic mastery to be associated with affect similarity between partners.

The Present Study

In the present study, we will examine how similar long-standing couples feel and how such spousal similarity relates to dyadic mastery beliefs. We expect more similar emotional experience to go hand in hand with greater dyadic mastery beliefs. Such effects may be particularly pronounced for negative affect because previous research on affective dynamics has more often found effects of negative affect (e.g., Larson & Almeida, 1999; Koffer et al., 2017). We also expect that dyadic mastery exhibits both relative stability and variability because long-standing partners likely have formed a general opinion of how well of a team they form, but also may still flexibly update their opinion to react to momentary changes and challenges such as when feeling dissimilar.

Similarity in emotional experience will be split up in the analyses fourfold: in similarity in positive affect (PA) and similarity in negative affect (NA), and in between-couple / within-couple similarity. This is warranted because within-person mechanisms are often different from between-person mechanisms (Brose, Voelkle, Lövdén, Lindenberger, &

Schmiedek, 2015; Hamaker, Nesselroade, & Molenaar, 2007; Hoffman & Stawsky, 2009; Nesselroade, 1991). Our analyses will also explore the role of relevant individual (age, gender, physical health) and relationship variables (relationship length and relationship satisfaction) that are typically related to affective experience, control beliefs, and overall relationship quality (Choi, Yorgason, & Johnson, 2016; Costa et al., 1987; Gatz & Karel, 1993; Hoppmann et al., 2011; Ross & Mirowsky, 1992, 2002; Roepke & Grant, 2011).

Method

To address our research questions, we used data from an experience sampling study on the daily lives of older couples, the Berlin Couple Dynamics Study, which was approved by the ethical committee of Humboldt University in 2012 (for more details on sample, procedure, and data, see also Hülür, Hoppmann, Rauers, Schade, Ram, & Gerstorf, 2016; Brinberg, Ram, Hülür, Brick, & Gerstorf, 2017; Drewelies, Schade, Hülür, Hoppmann, Ram, & Gerstorf, 2018).

Participants

Participants were 110 couples residing in the Berlin area who responded with interest to a newspaper advertisement describing the study. Participants were compensated with 100 Euros each. For the current study, the sample consists of all couples for whom data were available from both partners on the variables of interest, resulting in a sample of 99 heterosexual couples with a mean age of 75 years (SD = 4, range = 67 – 93) and a mean relationship length of 45 years (SD = 13, range = 2 – 64), all living together and married.

Procedure

After screening for possible exclusion criteria such as impairment to read questionnaires or to hear the reminder or health issues that would interfere with the cortisol information taken (not analyzed in the present study), participation was scheduled for what would be a “typical week” (7 days) for the partaking couples. One day before that week, research assistants brought all study materials to participants’ homes, including paper

questionnaires assessing background variables such as health and hobbies, obtained informed consent, explained the handling of the touch pad (iPad), and adjusted the times for the daily assessments (default setting were 10 AM, 1 PM, 4 PM, 7 PM and 10 PM) to fit participants' schedules in a way that they could go about their days as usual and without being incommoded, yet would allow them to answer the questionnaires at the same time as their partner. This did not require partners to be in the same location, even though participants reported being with their partner most, i.e. 94%, of the time.

Measures

Positive affect, negative affect, and spousal dissimilarity. Over the course of seven days, participants were prompted five times a day by their touch pad to indicate how they currently felt: "How are you feeling at the current moment: [affect]?"; all answers were given on a slider scale ranging from 0% (not at all) to 100% (totally). Negative affect (NA) scores were obtained by averaging scores on the emotion items sad, angry, nervous, worried, frustrated, overstrained, twitchy, floppy. Positive affect (PA) scores contain the average across the items happy, rested, relaxed, interested, satisfied, balanced, and stimulated. Both PA and NA composites had a good reliability with $\alpha = .89$.

The dissimilarity score was created separately for NA and PA, subtracting the partner's NA (PA) scores from the NA (PA) score of the individual, and then taking the absolute value of that difference (see Kenny, Kashy, & Cook, 2006). Following Bolger & Laurenceau (2013), we split variance in dissimilarity in between-couple variance and within-couple variance — how dissimilar couples typically feel and how much more/less dissimilar they feel at any given occasion. This was achieved by computing both a mean dissimilarity score for each couple (in the literature typically indicated by "BP" for between-person variance, in this case with "BC" for between-couple variance) and score indicating how much they deviate from that mean at any given occasion (indicated by "WC", within-couple variance).

Dyadic mastery. At each occasion when participants were prompted to indicate their emotions, they also were asked to answer how much (0 – 100%) they agreed with the statement: "Right now, my partner and I manage everyday life well." Dyadic mastery was transformed into T-Scores with a mean of 50 and standard deviation of 10.

Individual and dyad correlates. Our models included relevant individual-level (gender, age, health) and partner-level (relationship length and satisfaction) difference factors. *Age* was calculated as the difference between the date of the interview and a participant's date of birth and scaled in years. *Gender* was a dichotomous variable (0 = women; 1 = men). *Health* was measured as the amount of medical conditions participants checked off on an 11–item checklist (e.g., diabetes, cancer, and asthma), with higher scores reflecting more comorbidity. *Relationship length* was calculated as the difference between the date of the interview and a participant's self-reported relationship beginning and scaled in years. *Relationship satisfaction* was self-reported on a 5-point scale assessing agreement with the statement "All in all, how would you rate your current relationship?" on a 5-point scale (1 = "very good" to 5 = "very bad"). Because no one chose the 4 or 5 response options, we recoded relationship satisfaction into a 3-point variable with higher scores indicating greater relationship satisfaction.

Data Analysis

In order to accommodate the nested nature of our micro–longitudinal data (repeated occasions nested within individuals nested within couples), we used an actor-partner interdependence model (see Bolger & Laurenceau, 2013). This multilevel model for distinguishable dyads accounts for the statistical nonindependence of members in a dyad and a variety of correlates. We investigate the association of dissimilarity in NA and PA with dyadic mastery for wives and husbands separately because gender differences are often found in studies on emotion dynamics between partners (see Sels, Ceulemans, & Kuppens, 2018). Models were specified as follows:

$$Perceived\ Dyadic\ mastery_{tiw} = \beta_{0iw} + \beta_{1iw}(NA\ dissimilarity\ BC_{tiw}) + \beta_{2iw}(NA\ dissimilarity\ WC_{tiw}) + \beta_{3iw}(PA\ dissimilarity\ BC_{tiw}) + \beta_{4iw}(PA\ dissimilarity\ WC_{tiw}) + e_{tiw}, \quad (1)$$

$$Perceived\ Dyadic\ mastery_{tih} = \beta_{0ih} + \beta_{1ih}(NA\ dissimilarity\ BC_{tih}) + \beta_{2ih}(NA\ dissimilarity\ WC_{tih}) + \beta_{3ih}(PA\ dissimilarity\ BC_{tih}) + \beta_{4iw}(PA\ dissimilarity\ WC_{tih}) + e_{tih}, \quad (2)$$

where *perceived dyadic mastery*$_{ti}$ of person *i* at time *t* is a function of: $\beta_{0i,}$ i.e. a person–specific intercept coefficient indicating baseline levels of dyadic mastery beliefs (separate for wives / husbands, as all indices in the following); β_{1iw} or β_{1ih}, respectively, which is a person–specific coefficient indicating the extent to which general levels of negative affect dissimilarity are associated with the individual's concurrent perceived dyadic mastery; β_{2i}, indicating how much concurrent deviations from that general level of between-couple dissimilarity in negative affect (β_{1i}) impact dyadic mastery beliefs; β_{3i}, showing how much an individual's dyadic mastery beliefs are impacted by general levels of dissimilarity in *positive* affect in the couple, and by $\beta_{4i,}$ showing the impact of being currently more or less dissimilar in positive affect than usual on dyadic mastery beliefs; and residual error, e_{ti}.

The expanded model with the individual and spousal correlates took the following form:

$$\beta_{0iw} = \gamma_{00w} + \gamma_{01w}(age_{iw}) + \gamma_{02w}(health_{iw}) + \gamma_{03w}(relationship\ length_{iw}) + \gamma_{04w}(satisfaction\ with\ relationship_{iw}) + u_{0iw}, \quad (3)$$

$$\beta_{0ih} = \gamma_{00h} + \gamma_{01h}(age_{ih}) + \gamma_{02h}(health_{ih}) + \gamma_{03h}(relationship\ length_{ih}) + \gamma_{04h}(satisfaction\ with\ relationship_{ih}) + u_{0ih}, \quad (4)$$

where γ_{00H} and γ_{00W} indicate the expected levels of perceived dyadic mastery for the prototypical husband and wife, respectively. Other parameters indicate the extent to which interindividual differences in baseline level of dyadic mastery beliefs are related to individuals' age, comorbidity, relation length and relationship quality. Importantly, role specificity within a dyad was accommodated through inclusion of dummy indicators, *husband*$_i$ and *wife*$_i$ (see Bolger & Laurenceau, 2013) that allowed for gender–specific

variance of the intercept, σ^2_{u0h} and σ^2_{u0w} that could covary, $\sigma_{u0h,u0w}$, and occasion–specific residual variance, σ^2_{eh} and σ^2_{ew}, that might also covary within-dyad, $\sigma_{eh,ew}$, and between successive occasions (AR1). Male and female intercepts were included in random effects.

All models were estimated using SAS Proc Mixed 9.4 (Littell, Miliken, Stoup, Wolfinger, & Schabenberger, 2006) with incomplete data treated as missing–at–random (Little & Rubin, 1987) under full information maximum likelihood estimation. All predictors were centered at person and/or sample means. Statistical significance was evaluated at $\alpha =$ .05.

Results

Descriptive statistics and intercorrelations of non-standardized variables are presented in Table 1. As can be obtained, spouses differed in their experience of negative affect by 14.05 points (of 100, *SD* = 6.4) on average, and by 15.97 points (of 100, *SD* = 7.0) in their positive affect experience. Dissimilarity in negative, but not positive, affect was significantly associated with perceived dyadic mastery, $r_{husbands} = -0.32$, $r_{wives} = -0.31$. Dissimilarity in positive affect was greater at higher levels of wives' comorbidity, $r = 0.21$. Dyadic mastery beliefs reported by our couples were generally high, with women indicating slightly higher dyadic mastery ($M_{wives} = 89.89$, $SD = 9.78$; $M_{husbands} = 86.17$, $SD_{husbands} = 12.13$). These dyadic mastery beliefs were associated with greater relationship quality, $r_{wives} = 0.51$, $r_{husbands} = 0.36$. In addition to that, dyadic mastery beliefs were higher for men at a higher age, $r = 0.25$, and lower for wives in worse health, $r = -0.25$.

Results from the multilevel model predicting dyadic mastery beliefs from dissimilarity in affective experience are reported in Table 2 and illustrated in Figure 1. The model separates the effect of (a) average levels of affect dissimilarity in each couple, i.e. between-couple (BC) differences in dissimilarity, from (b) momentary deviations from that couple–specific average, i.e. within-couple (WC) differences in dissimilarity, both for (c) negative affect (NA) as well as (d) positive affect (PA), resulting in four predictors of dyadic mastery beliefs in the

baseline model: between-couple negative affect (NA_BC), within-couple negative affect (NA_WC), between-couple positive affect (PA_BC), & within-couple positive affect (PA_WC).

As expected, greater dissimilarity in negative affect predicted lower perceptions of dyadic mastery. Generally being more dissimilar to their spouse in negative affect (NA_WC) was associated with significantly lowered dyadic mastery beliefs in men ($\gamma = -0.48$) and women ($\gamma = -0.30$); which yielded a significant gender difference ($\gamma = -0.05$). On top of that, dyadic mastery beliefs were also associated with within-couple dissimilarity in negative affect: on occasions when couples were more dissimilar than usual in their experience of negative affect, dyadic mastery was significantly lower in both men ($\gamma = -0.03$) and women ($\gamma = -0.08$, all p's $< .05$). Dissimilarity in positive affect was not associated with perceptions of dyadic mastery, neither on the between- nor on the within-couple level.

As for covariation with the correlates, primarily relationship characteristics were associated with dyadic mastery beliefs, with greater quality of the relationship going hand in hand with greater dyadic mastery beliefs, the estimate being raised by 5.47 for men and 6.70 for women. In addition, men's age was significantly associated with dyadic mastery beliefs ($\gamma = 0.48$). Not including predictors in the model did not change the main pattern of results, estimates remained almost identical.

Discussion

The present study examined how similar spouses are with one another in their everyday emotional experience of positive and negative affect, and how such spousal similarity relates to their perception of mastering everyday life together well. Applying multilevel analyses to dyadic diary data from long–standing couples in their 70's revealed that spouses were generally rather similar in their emotional experience, differing by 14% in NA and 16% in PA, and that couple differences in both average and momentary spousal similarity in negative affect were indeed related to perceptions of dyadic mastery. Positive

affect, however, was not associated with dyadic mastery. This difference was not entirely unexpected, as previous research suggests that people may hold the belief that for a smooth interaction, being more similar in negative mood may be more important than similarity in positive mood (Huntsinger et al., 2009). Follow–up analyses revealed that the greatest association of any one single affect item with dyadic mastery was found for similarity in sadness. While the results from one–item affect analyses should not be overemphasized, it points into the same direction as the aforementioned previous results (see Huntsinger et al., 2009). Drawing not only from literature on correlates of *similarity in affect* but also from that on individual affect levels, it has been shown that compared to positive affect, negative affect is more strongly associated with *evaluations* (Kunzmann, 2008), which may be relevant here as our model's dependent variable (modeled concurrently with the model's predictors) essentially consists of individuals' *evaluation* of their cooperation success.

Our results revealed that couple differences in both average and momentary spousal similarity in negative affect were related to perceptions of dyadic mastery. Previous empirical research suggests that associations between affect similarity and relationship functioning might function via direct (e.g., Huntsinger et al., 2009) and indirect (e.g., Neupert et al., 2007) pathways. To illustrate, partners who perceive similar negative emotions might make better use of resources to deal with the challenges of everyday life because of a combined effort to change their current state. It would be highly informative for future studies to examine these and other potential pathways through which affect similarity operates more thoroughly. For example, similarity in negative affect might also be linked to dyadic mastery via stress regulatory processes (Hay & Diehl, 2010; Ong et al., 2005) or the ability to recognize emotions in one's partner (Hueluer et al., 2016; Kouros & Papp, 2019). Relatedly, it is an open question whether partners who perceive similar negative emotions show specific behaviors toward their spouses that might affect how they perceive to master life together. For

example, affect similarity might relate to increased verbal support and physical intimacy (e.g., hugs and other caresses) which in turn might affect perceptions of dyadic mastery.

Limitations and Outlook

We note several limitations of the study. To begin with our study design, concurrent associations of emotional similarity between spouses and perceived dyadic mastery does not establish any direction of which of these variables is causing or preceding the other. Dyadic mastery beliefs have been treated as the dependent variable in the present models, and theoretical notions would endorse that positive perceptions of couple cooperation could follow from emotional similarity (e.g., Anderson et al., 2004). However, it is also plausible that positive cooperation experiences make the couple more attuned to each other's emotional experience. Probably the most likely type of association is that of feedback loops in which cooperation and emotional concertation feed on each other.

One limitation of our measures is that the micro-longitudinal design did not allow for 42 assessments of dyadic mastery with more than one item. However, this may be called a rather conservative test, as a more sensitive measure would likely have picked up even more variance in perceptions of dyadic mastery. It would be highly instructive if future research were to study the phenomenon of dyadic mastery more thoroughly and examine its convergent and discriminant validity vis-à-vis other individual-level constructs (e.g., personal control) and couple-level constructs (e.g., relationship satisfaction).

One limitation of the sample studied here is that the underlying segment of the population is a very special one, with couples in their 70s who have been together for an average of 40 years and more. This limits the generalizability of the findings. For example, younger couples may experience lower levels of partner similarity given their lower interdependence and shorter joint biography (Hoppmann & Gerstorf, 2013) and often greater emotional variability (Röcke, Li, & Smith, 2009). Also, it could be that very dissimilar couples may not even make it into their 70's together, but separate before. This expectation is

based on research showing that dissimilarity in indicators of well–being (Anderson et al., 2003; Guven, Senik, & Stichnoth, 2012) and mental health (Gerstorf, Windsor, Hoppmann, & Butterworth, 2013) constitutes a risk factor for relationship separation.

Conclusion

Our study is the first to investigate emotional similarity in the special sample of old adults partnered for decades. Our results reveal that momentary deviations from their general level of similarity in negative affect is associated with deviations in the perception of how well partners manage everyday life together. This points to the power of emotional synchrony and the dynamic nature of dyadic mastery beliefs.

Words: 3,947

References

Anderson, C., Keltner, D., & John, O. P. (2003). Emotional convergence between people over time. *Journal of Personality and Social Psychology, 84,* 1054-1068. doi:10.1037/0022-3514.84.5.1054

Anderson, C., Keltner, D., Tiedens, L. Z., & Leach, C. W. (2004). *The emotional convergence hypothesis*. In L. Z. Tiedens, The social life of emotions (pp. 144-163). New York, NY: Cambridge University Press. doi: 10.1017/CBO9780511819568.009

Baltes, P. B. (1987). Theoretical propositions of life-span developmental psychology: On the dynamics between growth and decline. *Developmental Psychology, 23,* 611–626. http://dx.doi.org/10.1037/0012-1649 .23.5.611

Barsade, S. G. (2002). The ripple effect: Emotional contagion and its influence on group behavior. *Administrative Science Quarterly, 47*, 644-675. https://doi.org/10.2307/3094912

Berg, C. A., & Upchurch, R. (2007). A developmental-contextual model of couples coping with chronic illness across the adult life span. *Psychological Bulletin, 133,* 920 –954. doi: 10.1037/0033-2909.133.6.920

Berg, C. A., Wiebe, D. J., & Butner, J. (2011). Affect covariation in marital couples dealing with stressors surrounding prostate cancer. *Gerontology, 57*, 167-172. doi: 10.1159/000318642

Bolger, N., & Laurenceau, J.-P. (2013). Intensive longitudinal methods: An introduction to *diary and experience sampling research*. New York, NY: Guilford Press.

Bookwala, J., & Schulz, R. (1996). Spousal similarity in subjective well-being: The cardiovascular health study. *Psychology and Aging, 11*, 582-590. doi: 10.1037/0882-7974.11.4.582

Brinberg, M., Ram, N., Hueluer, G., Brick, T. R., & Gerstorf, D. (2017). Analyzing dyadic data using Grid-Sequence Analysis: Inter-dyad differences in intra-dyad dynamics. *Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*. doi: 10.1093/geronb/gbw160

Bronfenbrenner, U. (1986). *Recent advances in research on the ecology of human development*. In R. K. Silbereisen, K. Eyferth & G. Rudinger (Eds.), Development as action in context. Berlin-Heidelberg, Germany: Springer.

Brose, A., Voelkle, M. C., Lövdén, M., Lindenberger, U., & Schmiedek, F. (2015). Differences in the between-person and within-person structures of affect are a matter of degree. *European Journal of Personality, 29,* 55-71. https://doi.org/10.1002/per.1961

Butler, E. A. (2015). Interpersonal affect dynamics: It takes two (and time) to tango. *Emotion Review, 7(4),* 336-341. .doi:10.1177/1754073915590622

Butler, E. A., & Randall, A. K. (2013). Emotional coregulation in close relationships. *Emotion Review, 5,* 202-210. doi:10.1177/1754073912451630

Bye, D., & Pushkar, D. (2009). How need for cognition and perceived control is differentially linked to emotional outcomes in the transition to retirement. *Motivation and Emotion, 33,* 320–332. doi:10.1007/s11031-009-9135-3

Carstensen, L. L. (1992). Social and emotional patterns in adulthood: Support for socioemotional selectivity theory. *Psychology and Aging, 7,* 331–338. http://dx.doi.org/10.1037/0882-7974.7.3.331

Carstensen, L. L., Gottman, J. M., & Levenson, R. W. (1995). Emotional behavior in long-term marriage. *Psychology and Aging, 10,* 140-149. doi: 10.1037/0882- 7974.10.1.140

Carstensen, L. L., Turan, B., Scheibe, S., Ram, N., Ersner-Hershfield, H., Samanez-Larkin, G. R., ... & Nesselroade, J. R. (2011). Emotional experience improves with age: evidence based on over 10 years of experience sampling. *Psychology and aging*, *26*, 21-33. doi: 10.1037/a0021285.

Diehl, M., Hay, E. L., & Chui, H. (2012). Personal risk and resilience factors in the context of daily stress. In B. Hayslip & G. C. Smith (Eds.), *Annual review of gerontology and geriatrics (Vol. 32). Emerging perspectives on resilience in adulthood and later life* (pp. 251–274). New York, NY: Springer Publishing.

Drewelies, J., Chopik, W. J., Hoppmann, C. A., Smith, J. & Gerstorf, D. (2016). Linked lives: Dyadic associations of mastery beliefs with health (behavior) and health (behavior) change among older partners. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*. doi: 10.1093/geronb/gbw058

Drewelies, J., Schade, H., Hülür, G., Hoppmann, C. A., Ram, N., & Gerstorf, D. (2018). The more we are in control, the merrier? Partner Perceived Control and Negative Affect in the Daily Lives of Older Couples. *The Journals of Gerontology: Series B,* gby009. doi: 10.1093/geronb/gby009

Fischer, A. H., & Van Kleef, G. A. (2010). Where have all the people gone? A plea for including social interaction in emotion research. *Emotion Review, 2*, 208 - 211. doi: 10.1177/1754073910361980

Genadek, K. R., Flood, S. M., & Moen, P. (2017). For Better or Worse? Couples' Time Together in Encore Adulthood. *The Journals of Gerontology: Series B, 74*, 329-338. Doi: 10.1093/geronb/gbx129

Gerstorf, D., Windsor, T. D., Hoppmann, C. A., & Butterworth, P. (2013). Longitudinal change in spousal similarities in mental health: Between- couple and within-couple perspectives. *Psychology and Aging, 28,* 540 – 554. doi: 10.1037/a0032902

Gonzaga, G. C., Campos, B., & Bradbury, T. (2007). Similarity, convergence, and *gregariousness*. Stanford: Stanford University Press.

Guven, C., Senik, C., & Stichnoth, H. (2012). You can't be happier than your wife. Happiness gaps and divorce. *Journal of Economic Behavior & Organization, 82,* 110–130. doi: 10.1016/j.jebo.2012.01.003

Hamaker, E. L., Nesselroade, J. R., & Molenaar, P. C. (2007). The integrated trait–state model. *Journal of Research in Personality, 41,* 295-315. doi: 10.1016/j.jrp.2006.04.003

Hay, E. L., & Diehl, M. (2010). Reactivity to daily stressors in adulthood: The importance of stressor type in characterizing risk factors. *Psychology and Aging, 25*, 118–131. doi:10.1037/a0018747

Hoffman, L., & Stawski, R. S. (2009). Persons as contexts: Evaluating between-person and within-person effects in longitudinal analysis. *Research in Human Development, 6,* 97-120. doi: 10.1080/15427600902911189

Hoppmann, C. A. & Gerstorf, D. (2013). Spousal goals, affect quality, and collaborative problem solving: Evidence from a time-sampling study with older couples. *Research in Human Development, 10,* 70-87. doi: 10.1080/15427609.2013.760260

Hoppmann, C. A., & Gerstorf, D. (2016). *Social interrelations in aging: The sample case of married couples*. In K. W. Schaie & S. L. Willis (Eds.), Handbook of the Psychology of Aging (8th ed., pp. 263-277). San Diego, CA: Elsevier. doi: 10.1016/B978-0-12-411469-2.00014-5

Hoppmann, C., Gerstorf, D., & Luszcz, M. (2011). Dyadic interrelations in lifespan development and aging: how does 1+ 1 make a couple? – Introduction. *Gerontology, 57,* 144-147. doi:10.1159/000320324

Hoppmann, C., Gerstorf, D., Willis, S. L., & Schaie, K. W. (2011). Spousal interrelations in happiness in the Seattle Longitudinal Study: Considerable similarities in levels and changes over time. *Developmental Psychology, 47,* 1-8. doi: 10.1037/a0020788

Hülür, G., Hoppmann, C. A., Rauers, A., Schade, H., Ram, N., & Gerstorf, D. (2016). Empathic accuracy for happiness in the daily lives of older couples: Fluid cognitive performance predicts pattern accuracy among men. *Psychology and Aging*, *31*, 545–552. doi:10.1037/pag0000109

Huntsinger, J. R., Lun, J., Sinclair, S., & Clore, G. L. (2009). Contagion without contact: Anticipatory mood matching in response to affiliative motivation. *Personality and social psychology bulletin*, *35*, 909-922. doi: 10.1177/0146167209335299

Kenny, D. A., Kashy, D.A., & Cook, W. L. (2006). *Dyadic data analysis*. New York, NY: Cambridge University Press.

Kiecolt-Glaser, J. K., & Wilson, S. J. (2017). Lovesick: How couples' relationships influence health. *Annual review of clinical psychology, 13,* 421-443. .doi:10.1146/annurev-clinpsy-032816-045111

Koffer, R., Drewelies, J., Almeida, D., Conroy, D., Pincus, A., Gerstorf, D., & Ram, N. (2017). The role of general and daily control beliefs for affective stressor-reactivity across adulthood and old age. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*. doi: 10.1093/geronb/gbx055

Kouros, C. D., & Papp, L. M. (2019). Couples' perceptions of each other's daily affect: Empathic accuracy, assumed similarity, and indirect accuracy. *Family Process*, *58*, 179–196. doi: 10.1111/famp.12344

Kunzmann, U. (2008). Differential age trajectories of positive and negative affect: Further evidence from the Berlin Aging Study. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 63,* 261–270. doi: 10.1093/geronb/63.5.p261

Lachman, M. E. (2006). Perceived control over aging-related declines: Adaptive beliefs and behaviors. *Current Directions in Psychological Science, 15,* 282–286. doi:0.1111/j.1467-8721.2006.00453.x

Lachman, M. E., Neupert, S. D., & Agrigoroaei, S. (2012). *The relevance of a sense of control for health and aging*. In K. W. Schaie & S. L. Willis (Eds.), Handbook of the psychology and aging (7th edition, pp. 175-190). New York, NY: Elsevier. doi: 10.1016/B978-0-12-380882-0.00011-5

Lang, F. R. (2001). Regulation of social relationships in later adulthood. *Journal of Gerontology: Psychological Sciences, 56B,* 321-326. doi: 10.1093/geronb/56.6.P321

Larson, R. W., & Almeida, D. M. (1999). Emotional transmission in the daily lives of families: A new paradigm for studying family process. *Journal of Marriage and the Family, 61,* 5–20. doi: 10.2307/353879

Littell, R. C., Milliken, G. A., Stroup, W. W., Wolfinger, R. D., & Schabenberger, O. (2006). *SAS for mixed models (2nd ed.)*. Cary, NC: SAS Institute.

Locke, K. D., & Horowitz, L. M. (1990). Satisfaction in interpersonal interactions as a function of similarity in level of dysphoria. *Journal of personality and social psychology, 58,* 823 -831. doi: 10.1037/0022-3514.58.5.823

Nesselroade, J. R. (1991). *Interindividual differences in intraindividual change*. In L. M. Collins & J. L. Horn (Eds.), Best methods for the analysis of change: Recent advances, unanswered questions, future directions (pp. 92-105). Washington, DC, US: American Psychological Association. doi: 10.1037/10099-006

Neupert, S. D., Almeida, D. M., & Charles, S. T. (2007). Age differences in reactivity to daily stressors: The role of personal control. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences, 62,* 216–225. doi:10.1093/geronb/62.4.p216

Ong, A. D., Bergeman, C. S., & Bisconti, T. L. (2005). Unique effects of daily perceived control on anxiety symptomatology during conjugal bereavement. *Personality and Individual Differences, 38,* 1057–1067. doi: 10.1016/j.paid.2004.07.004

relationship satisfaction in dating and married couples. *Journal of Personality and*

Röcke, C., Li, S. C., & Smith, J. (2009). Intraindividual variability in positive and negative affect over 45 days: Do older adults fluctuate less than young adults?. *Psychology and aging, 24*, 863-878. doi: 10.1037/a0016276

Rowe, J. W., & Kahn, R. L. (1997). Successful aging. *The Gerontologist, 37,* 433–440. doi: 10.1093/geront/37.4.433

Schachter, S. (1959). *The psychology of affiliation. Experimental studies of the sources of gregariousness*. Palo Alto, CA, US: Stanford Univ. Press.

Schade, H. M., Hülür, G., Infurna, F. J., Hoppmann, C. A., & Gerstorf, D. (2016). Partner dissimilarity in life satisfaction: Stability and change, correlates, and outcomes. *Psychology and aging*, *31*, 327-339. doi: 10.1037/pag0000096

Schoebi, D., & Randall, A. K. (2015). Emotional dynamics in intimate relationships. *Emotion Review,* 7, 342-348. doi:10.1177/1754073915590620

Sels, L., Ceulemans, E., & Kuppens, P. (2018). *A general framework for capturing interpersonal emotion dynamics: Associations with psychological and relational adjustment*. In A. K. Randall & D. Schoebi (Eds.), Interpersonal emotion dynamics in close relationships (pp. 27-46). doi: 10.1017/9781316822944.004

Skinner, E. A. (1996). A guide to constructs of control. *Journal of Personality and Social Psychology, 71,* 549–570. doi:10.1037/0022-3514.71.3.549

Social Psychology, 93, 34-48. doi: 10.1037/0022-3514.93.1.34

Townsend, S. S., Kim, H. S., & Mesquita, B. (2014). Are you feeling what I'm feeling? Emotional similarity buffers stress. *Social Psychological and Personality Science*, *5*, 526-533. doi: 10.1177/194855061351149910.1177/1948550613511499

Verhofstadt, L. L., Buysse, A., Ickes, W., Davis, M., & Devoldre, I. (2008). Support provision in marriage: The role of emotional similarity and empathic accuracy. *Emotion, 8,* 792–802. doi:10.1037/a0013976

Windsor, T. D., & Anstey, K. J. (2010). Age differences in psychosocial predictors of positive and negative affect: A longitudinal investigation of young, midlife, and older adults. *Psychology and Aging, 25,* 641–652. doi:10.1037/a0019431

Windsor, T. D., Ryan, L. H., & Smith, J. (2009). Individual well-being in middle and older adulthood: Do spousal beliefs matter? *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 64,* 586–596. doi:10.1093/geronb/gbp058

Footnotes

[1]This is conceptually distinct from relationship efficacy (beliefs), which describes the perception of the individual to be able to tackle relationship-related problems (see Johnson & Anderson, 2015; Cui, Fincham, & Pasley, 2008).

[2] We opted against creating the difference score based on the partners' dissimilarity on each separate affect item given that overall positive / negative affect is the variable of interest in most affect research (see, e.g., Sels, Ceulemans, & Kuppens, 2018, or Dejonckheere et al., 2018) as well as general affect likely being primarily perceived by the partner, rather than differentiated emotions. However, a difference scored based on dissimilarity on each item was used in follow-up analyses and yielded comparable results.

Table 1. *Descriptive Statistics and Intercorrelations for Variables in Study*.

	Intercorrelations								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	M_{wives}	SD_{wives}
(1) Dyadic mastery (0–100)		–0.31*	–0.04	–0.05	–0.25*	0.15	–0.51*	89.89	9.78
(2) Dissimilarity in Negative Affect	–0.32*		0.18	0.04	0.14	0.05	–0.15	14.05	6.81
(3) Dissimilarity in Positive Affect	0.04	0.24		0.08	0.21*	0.04	–0.09	15.97	6.93
(4) Age (67–93)	0.25*	–0.16	–0.9		0.20	0.42*	0.14	74.20	3.62
(5) Comorbidity	–0.10	0.14	0.04	–0.11		–0.04	–0.07	3.74	2.40
(6) Relationship length	0.06	0.06	0.01	0.31*	–0.09		–0.08	45.69	12.67
(7) Relationship satisfaction	0.36*	–0.16	–0.14	0.27*	0.14	0.08		2.47	0.56
$M_{husbands}$	86.17	14.05	15.97	76.23	3.42	45.53	2.61		
$SD_{husbands}$	12.13	6.81	6.93	3.75	2.34	12.61	0.53		

Note: $N = 99$ couples (198 individuals) who provided up to 35 observations per participant. Statistics for husbands presented below the diagonal and those for wives above the diagonal.

* $p < .05$

Table 2. *Multilevel Model Examining Dyadic Mastery: The Role of Dissimilarity in Positive and Negative Affect.*

	Men		*Women*	
Parameter	Estimate	(SE)	Estimate	(SE)
Fixed effects				
Intercept	48.18*	(1.04)	53.64*	(0.79)
Dissimilarity Negative Affect (BC)	–0.48*	(0.15)	–0.30*	(0.12)
Dissimilarity Negative Affect (WC)	–0.03*	(0.01)	–0.08*	(0.01)
Dissimilarity Positive Affect (BC)	0.23	(0.15)	0.06	(0.11)
Dissimilarity Positive Affect (WC)	–0.02	(0.01)	–0.02	(0.01)
Age	0.63*	(0.28)	0.04	(0.22)
Comorbidity	0.01	(0.42)	–0.58	(0.30)
Relationship Length	–0.01	(0.08)	0.07	(0.06)
Relationship satisfaction	5.47*	(1.88)	6.70*	(1.29)
Random effects				
Between couples				
Variance intercept	88.40*	(14.14)	46.73*	(7.58)
Covariance intercepts of women and men (2,1)	20.61*	(8.30)		
Within couples				
Residual variance (UN 1,1) (UN 2,2)	49.07*	(1.38)	55.95*	(1.56)
Covariance women's residual men's residual (UN1,2)	12.36*	(1.17)		
Autocorrelation (AR 1)	0.32*	(0.01)		
Fit indices				
AIC			42595.8	
–2LL			42581.8	

Note. $N = 99$ couples (198 individuals). Dyadic mastery was standardized to a T–metric ($M = 50$, $SD = 10$). Negative parameters indicate lower perceived mastery of everyday life with the partner.
BC = between-couple, i.e. a couple-specific average of their dissimilarity level in comparison to other couples in the sample.
WC = within-person, i.e. momentary deviations from the couple-specific mean level of dyadic mastery.
SE = Standard Error, AIC = Akaike information criterion, –2LL = –2 Log Likelihood. * $p < .05$.

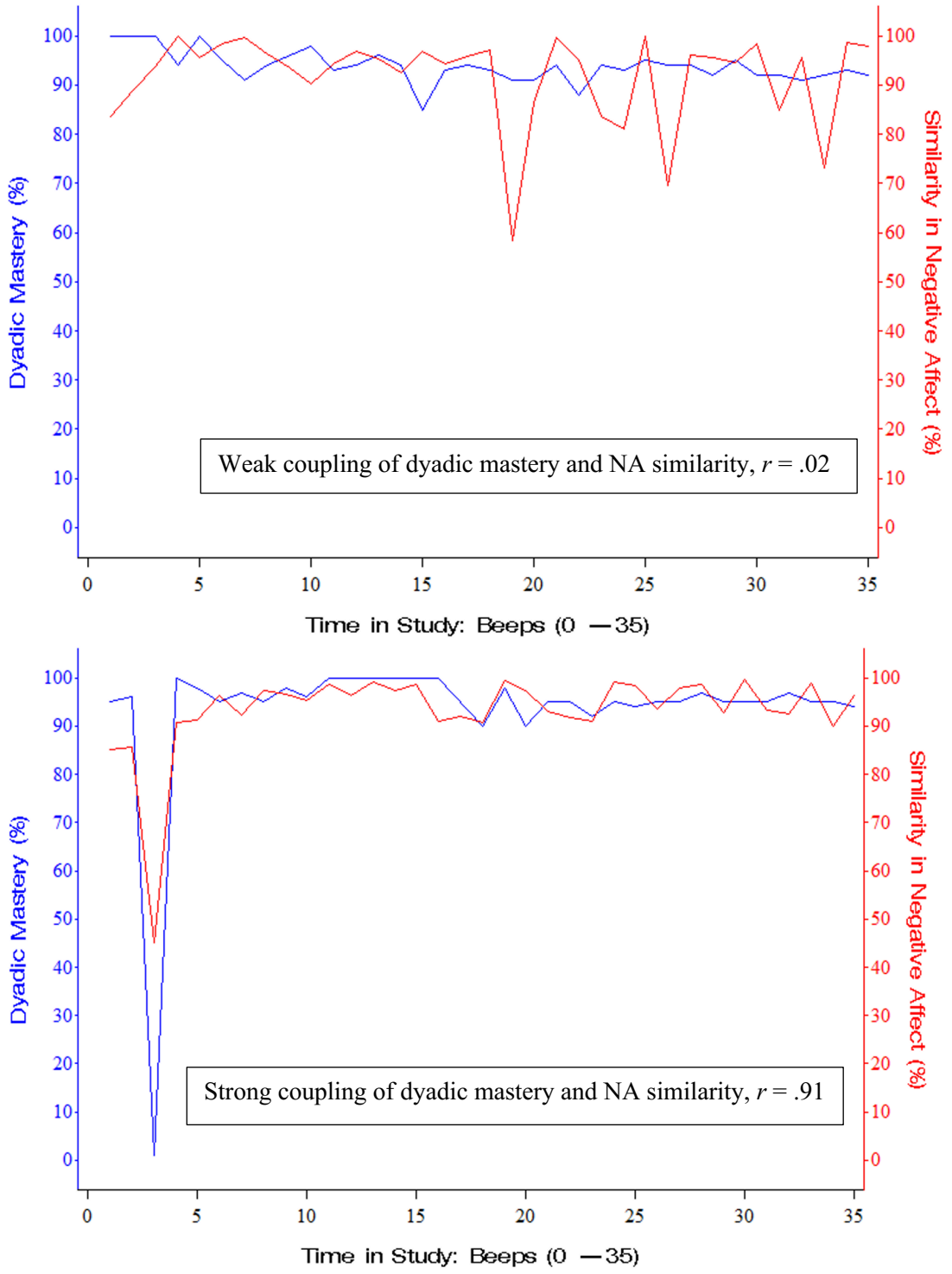


Figure 1. Trajectories of negative affect similarity and dyadic mastery for a person with a weak coupling between the two variables (left panel), $r = .02$, and a person with a strong coupling between the two variables (right panel), $r = .91$.

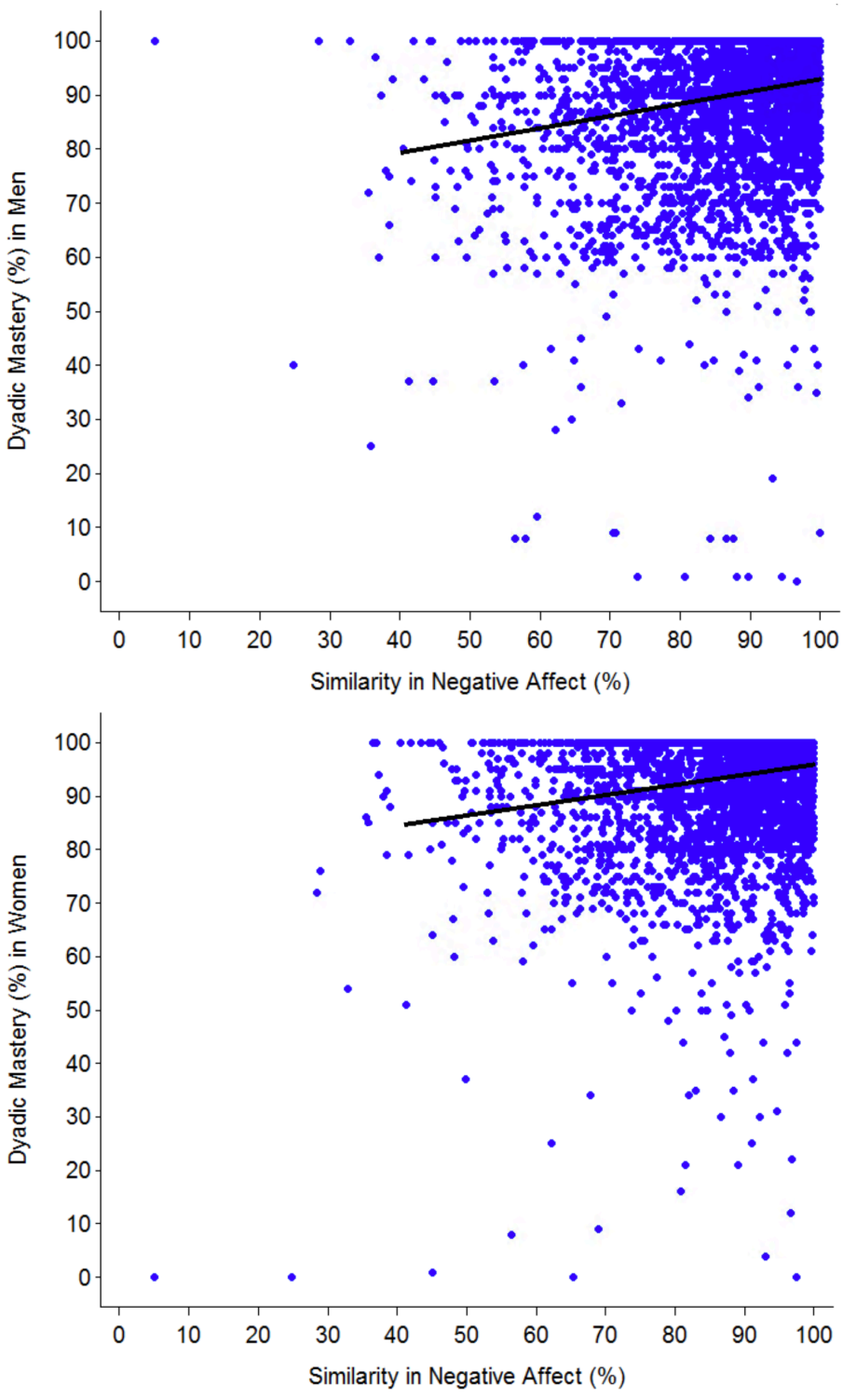


Figure 2. Scatterplot of spousal similarity in momentary affect ratings and dyadic mastery. It can be obtained that higher similarity in momentary negative affect between partners predicted higher levels of dyadic mastery among both men (left-hand Panel A) and women (right-hand Panel B).